iPAD AIR REVIEW

THE iPAD FOR
THE REST OF US

Macworld

FEBRUARY 2021

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PIXEL 5
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NOTE 20 ULTRA

iPHONE 12 VS ANDROID'S BEST

HOW DOES APPLE'S LATEST SMARTPHONE
STACK UP AGAINST THE COMPETITION?

PLUS: 7 WAYS iOS 14 WILL HELP PROTECT YOUR PRIVACY

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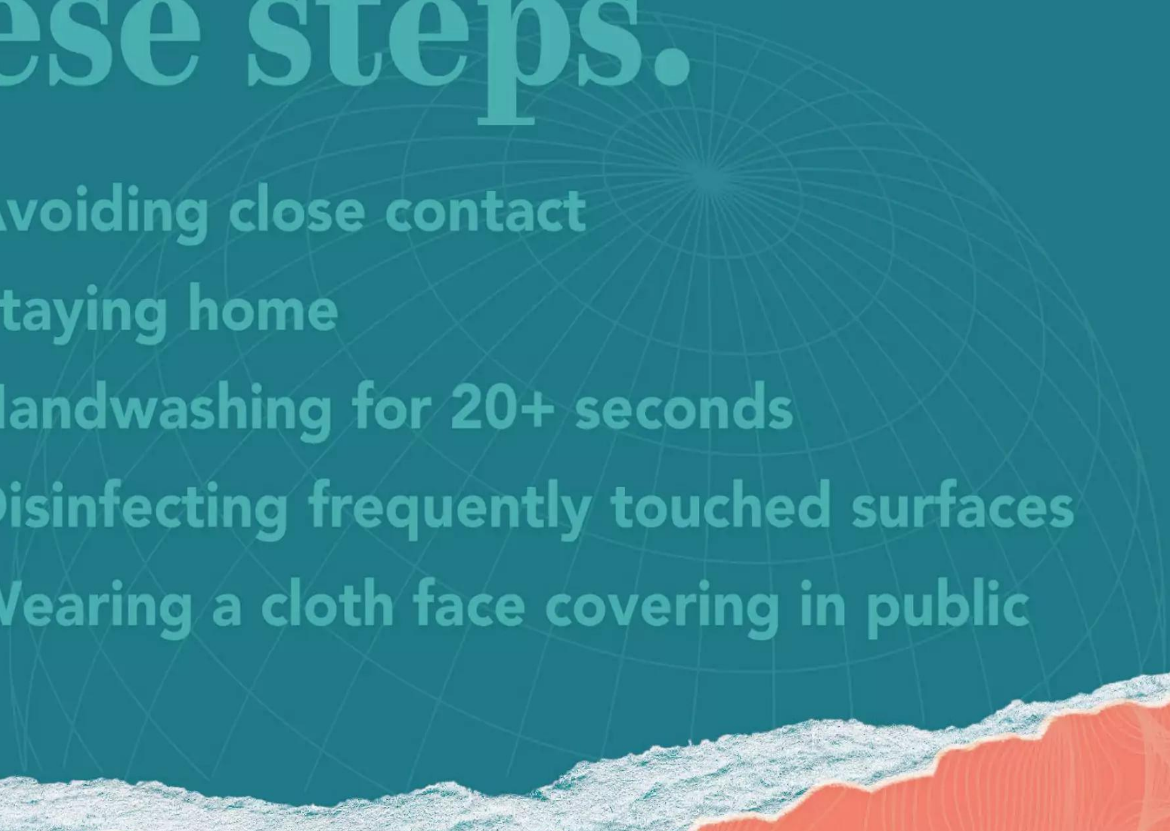

- ✓ Avoiding close contact
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App Privacy

The developer, **PalAbout Inc.**, indicated that its privacy practices include handling of data as described below. For more information, see the developer's privacy policy.

Data Used to Track You

The following data may be used to track you across apps and websites owned by other companies:

Contact Info

Location

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MACUSER

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How to fix the M1 Mac’s most disappointing feature: iOS apps on the Mac

Both Apple and app developers have work to do.

BY JASON SNELL

If there’s a single disappointment in the release of Apple’s first wave of M1 Macs, it’s the lackluster launch of iOS apps running inside of macOS. What should be an amazing unification of Apple’s platforms and a massive expansion of the Mac software base is, instead...kind of a non-event.

Running iOS apps on the Mac can be a little weird, it’s true. But it can sometimes be good. Unfortunately, a lot of interesting iOS apps just aren't available at all, because their developers have removed them from the Mac side of the iOS App Store.

It's not a great situation. It needs to get better. Here are some ways that might happen.

WHAT DEVELOPERS CAN DO

Though iOS app developers with the Apple silicon Developer Transition Kit could build their iOS apps for Mac and run them to get an idea how they'd perform on macOS, I understand that many developers didn't do this, and others didn't feel comfortable letting their iOS apps out into the wild without first giving them a try on a real M1 Mac. A lot of them chose to just stay on the safe side and opt their apps out.

But I hope it's a temporary situation. While iPad and iPhone apps have some quirks in a Mac context, they honestly work better than I expected. And I think users are probably more forgiving of quirks than perhaps developers are. I hope that perfect won't be the enemy of good, and that users won't be deprived of apps they love from iOS just because they're not quite up to a developer's very high standards.

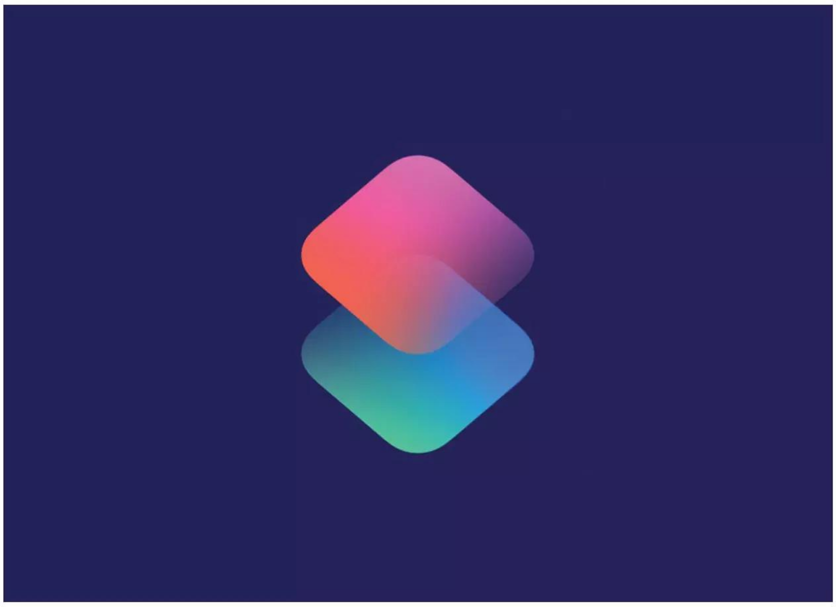
What I'm hoping is that developers will look at how their iOS apps perform on the Mac and decide that they do want them there—and will be driven to improve them. Improving support for iPad features like cursors and keyboard shortcuts will make an app better on the Mac, too. And developers can go even further by embracing Catalyst, which lets those iOS apps run as full Mac apps, with a more normal menu bar and other Mac adaptations. (Apps running with Catalyst will also run on the installed base of Intel Macs, which will be a majority of Macs in operation for a few

Project Catalyst

Catalyst was introduced in 2019 as a way for developers to make iOS apps work as a full Mac app, complete with macOS UI implementations.

years yet.)

Finally, I'd encourage app developers to listen to their customers and understand that an iOS app might be a better option than the alternative. I'm so sick of being kicked to lousy web-based experiences on the Mac when there are excellent apps for those services on iOS. Even a slightly strange iOS experience, running in a standalone app, beats out keeping it in a Safari tab that I'll invariably close by accident.



A Mac version of iOS's Shortcuts would help developers bring their iOS apps to the Mac.

WHAT APPLE CAN DO

This isn't all on developers. If Apple wants to benefit from having iOS apps run on all future Mac hardware, it's going to need to keep pushing.

Part of that push will need to come on the software side. Apple needs to continue to develop Catalyst and make it as easy as possible for iOS developers to make apps that work great both on iPads with the Magic Keyboard attached, and on Macs. The less work developers have to do to make their apps great across a wide range of Apple devices, the more likely they are to do the work.

Apple needs to bring across more of its own technologies, too. The Shortcuts app is a key way to automate functions on iOS, but it doesn't exist on the Mac, and many iOS apps will be a little less functional until it does.

But Apple's biggest impact can come with the decisions it makes about hardware. The reason some iOS apps feel weird on the Mac is that they were designed for touch, not for a cursor and keyboard. Introducing Macs with touchscreens won't change the Mac's status as a mouse-first operating system, but it will offer alternate modes of input—and open up better compatibility with some iOS apps.

And imagine if Apple made a two-in-one convertible laptop, with a screen that could be wrapped around the back to make it temporarily more like an iPad. A lot of users would love a laptop that could transform into a tablet from time to time—but the apps need to be there.

WHAT USERS CAN DO

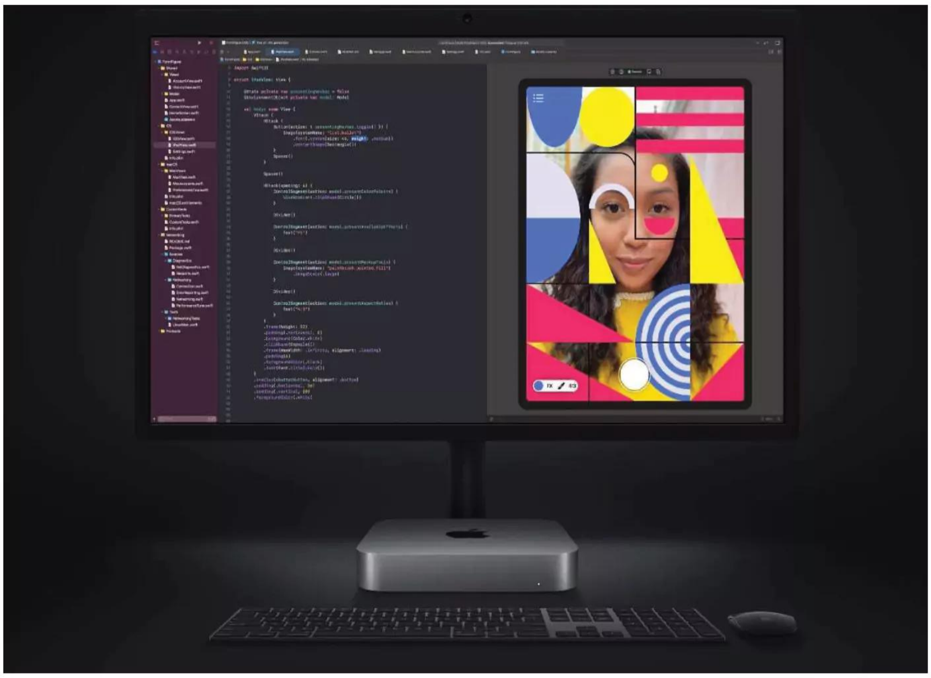
Developers have it rough. They've spent the summer wrestling with some major changes in macOS Big Sur, plus the transition to Apple silicon. They deserve your respect and your politeness.

That said, if there's an iOS app that you love that's not available on the Mac, it's worth politely contacting that developer. Explain to them—politely!—why you want to run that app on the Mac, and why it's a superior option to whatever their Mac solution is today. The more demand developers hear, the more likely they are to prioritize bringing their iOS app to the Mac.

Another thing to keep in mind: Every iOS developer is a Mac user, because the only way to develop apps for iOS is to use Xcode. This means that most iOS developers aren't going to look down on Mac users who want their favorite iOS apps to run on the Mac—because they probably do, too.

Finally, all of us need to be patient. It's the very earliest days for Apple silicon on the Mac. I've talked to some developers who have been working on bringing their iOS apps to the Mac since the initial Mac Catalyst announcement in the summer of 2019—and they're still not there. The first version of Catalyst was limited, and so many of them waited for the version in Big Sur. It takes time to do it right. I'm confident that more apps are on the way. But we all need a little patience.

Still, developers: If your app runs okay on the Mac and there's no huge business reason to bar Mac users from using it, why not check that box? Chances are good that your customers will thank you for it. ■



It's easy to forget that iOS and iPad OS developers are Mac users, too.

What opportunities are there for Apple during the pandemic?

Tim Cook talked up Apple's ability to innovate during a pandemic, so what else might the company come up with to help ease our quarantined lives?

BY DAN MOREN

As a rule, Apple is a company that is judicious about what opportunities it takes, and which ones it leaves to others. The company is famous for saying "no" to way more ideas than it says "yes" to, with the understanding that this process makes the products it does choose to build that much better.

But that doesn't mean that the company never misses a trick. On the contrary, there are more than a few markets where an Apple presence would be a welcome one, especially in places where the company

IMAGE: APPLE

effects
mute
flip
end

Video conferencing with FaceTime and other software is now the norm. Is this an area where Apple sees opportunity?

can lend its considerable heft to providing either a strong example, or meaningful competition.

And, as Tim Cook pointed out (go.macworld.com/ptot) during a recent financial results call, the current world situation has opened the door to new challenges and new opportunities, as we're forced to innovate to find solutions to the problems we all face today. Given that situation, it seems like there are definitely some pandemic-influenced areas where Apple could make a significant difference.

BRINGING NEW MEANING TO THE TV 'REMOTE'

Working, going to school, socializing: all of these things have gone remote in the past seven months. Calls via Zoom, Skype, or FaceTime have become the norm for seeing other people, and while it might be a poor substitute for real face-to-face contact, it's what we've got.

While I've advocated in the past that Apple could stand to improve FaceTime (go.macworld.com/imft) from a software perspective, there's also an argument for the company expanding its video conferencing capabilities in terms of hardware as well. Having partaken in more Zoom calls than I can count over the past half a year, one thing that I see a lot of people struggling with is video conferencing in a setting when there are more people than fit comfortably around a single device, whether it be an iPad or even a 27-inch iMac.

So perhaps it would help if the company could find a way to implement video conferencing capabilities to a device with an even larger display: the Apple TV. While Apple certainly wouldn't be the first company to try and bring video conferencing to the living room, it does have a number of advantages that it could leverage: not only its own FaceTime technology, but also an existing app platform which could easily provide access to other third-party apps, like Zoom or Google Meet.

This would, of course, require some sort of camera capability for the Apple TV, either by adding a functional USB port to the device, or by wirelessly connecting to the camera on an external device like an iPhone or iPad. But a HomePod or HomePod mini might make an ideal speaker and microphone assembly for such a purpose.

HOME IS WHERE THE KIT IS

With all of us spending more time in our homes, many of us—especially the tech enthusiasts—have been investing in and experimenting with smart home technology. After all, if home is where we're forced to be, we might as well make it as pleasant an experience as possible.

Personally, spending all this time with smart home tech has led me to one inescapable conclusion: much of it could be a lot better. There are numerous standards, which range from different software compatibility issues to requiring hardware base stations that have to be connected to your network. While Apple's foray into HomeKit aimed to provide a centralized system for dealing with smart home tech, it has remained a mixed bag, with many devices having uneven support for the framework.

Apple has HomeKit, but the company could instantly take a leadership role in smarthome tech with its own devices.

Though I hope that Apple's participation in the Project Connected Home over IP (go.macworld.com/cnhm) will lead to better unity among smart home devices, one way the company could help improve the market is leading by example. With Apple's signature melding of software, hardware, and services, it's positioned perfectly to design smart home devices that demonstrate the best of what the technology could offer. Selling, say, a smart plug, a wireless video camera, and perhaps even a smart door lock that it could offer as a complete connected home solution would not only allow it to put its message of privacy and security front and center, but also pave the way for third-party device makers.

PANDEMIC POTPOURRI

There are plenty of other ventures I'd like to see Apple engage in to help us cope with our new reality: everything from—as my colleague Jason Snell has suggested—a VPN service to help us secure our home networks all the way to some more practical use for all that augmented reality tech it keeps talking up: say, a way to enhance our ability to feel like we're in a shared place with people who are far away.

But new products don't happen quickly, and while seven months of a pandemic might seem like ages to us, it's a pretty short time frame for a company like Apple, especially given that it too has to adapt to a different reality of working environments.

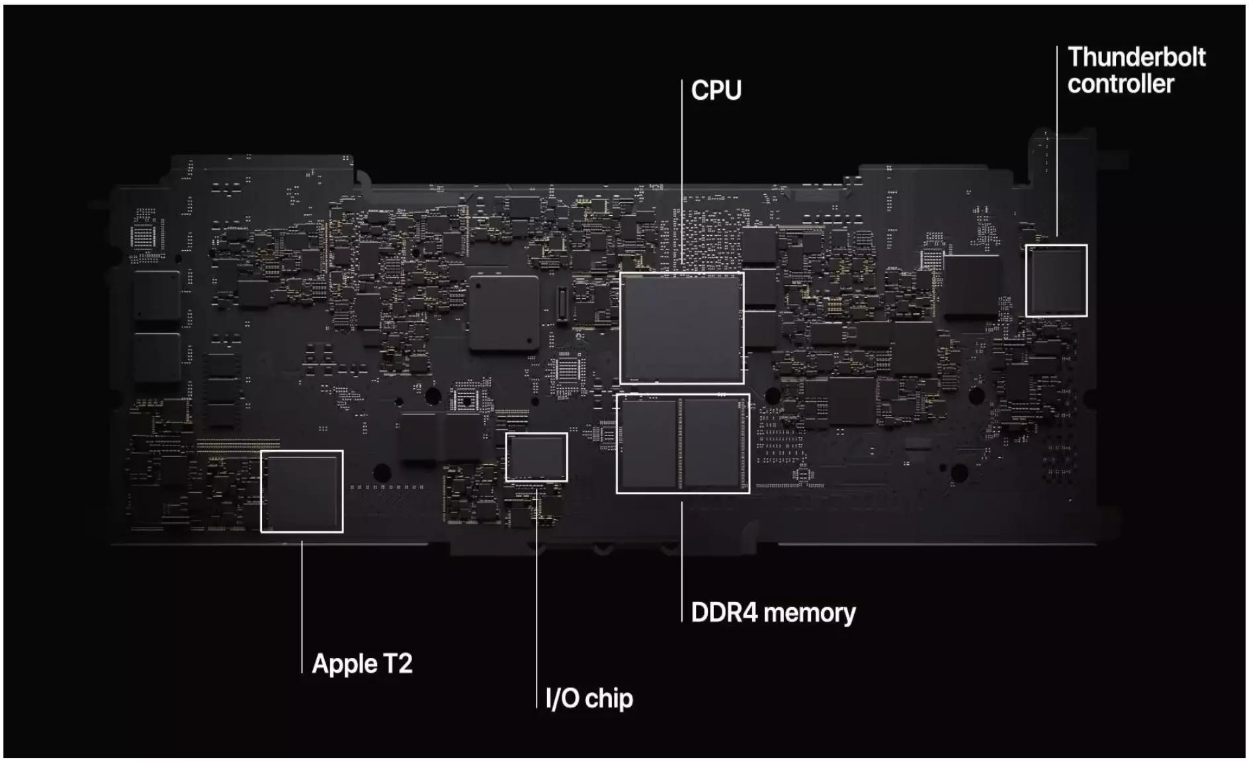
That said, don't give up hope. In addition to Tim Cook's bullish feeling during the financial results call, on innovation in the time of coronavirus, my poring over Apple's latest financial statement yielded one interesting (to me, anyway) data point: Apple spent 20 percent more on its research and development in fiscal year 2020 than it did in the year prior. Clearly the wheels at Cupertino are turning…even if, for now, they aren't at Cupertino. ■

Apple spent 20 percent more on R&D in fiscal year 2020 than it did in the previous year.

Apple working on its first cellular modem, which could bring 5G to the MacBook

We can dream, can't we?

BY MICHAEL SIMON



After a year that delivered a host of improvements to Apple's silicon offerings, including the A14 Bionic (go.macworld.com/a14b) and M1 processors (go.macworld.com/m1pr), it appears that Apple is looking to bring even more components in-house. A recent report from Bloomberg (go.macworld.com/nwrp) claims that Apple has begun working on its first cellular modem to bring 5G to its growing system-on-chip components.

The development of a 5G modem isn't a surprise, as Apple paid a cool billion bucks (go.macworld.com/buks) on the remains of Intel's smartphone modem chip business back in 2019. According to the report by Mark Gurman, Apple senior vice

IMAGE: APPLE

president of hardware technologies Johny Srouji told attendees at a recent town hall that Apple "kicked off the development of our first internal cellular modem which will enable another key strategic transition."

Development will likely take years to land in any of Apple's products, but it's a significant step. Modems and particularly 5G models are extremely power-hungry, so bringing the modem in-house could bring massive gains in power and thermal efficiency as well as battery life.

Apple has used Intel and Qualcomm modems in its previous cellular products, including the iPhone, iPad, and Apple Watch. However, Apple's first 5G product, the iPhone 12 (go.macworld.com/if12), relies entirely on Qualcomm's X55 modem, since Intel abandoned development leaving few options at the scale Apple demands. Apple previously signed a 6-year commitment to license chips from Qualcomm in early 2019.

Bringing the modem in-house will presumably reduce costs, but the implications are much greater than that. It could lead to cellular connectivity becoming a standard feature in the iPad and Apple Watch—in that you don't need to choose a cellular model but it will be there if you want it.

It's probably going to take a while though. Intel was developing its own 5G modem for years before it abandoned the project, and even Qualcomm's first-gen 5G modem had issues with heat and power. But as Srouji said, "Long-term strategic investments like these are a critical part of enabling our products and making sure we have a rich pipeline of innovative technologies for our future."

Hopefully, that future includes the holy grail of connected devices, the MacBook. Apple has yet to ship a Mac with a cellular connection likely due to the power and battery life limitations, but the M1 Mac, which has greatly improved battery life in the MacBook Air (go.macworld.com/m1ar) and MacBook Pro (go.macworld.com/m1mb), changes the outlook. And with its own modem, power efficiency would be even less of an issue. ■

The iPhone 12 is Apple's first 5G product.

Three ways Apple could improve its core Services experience

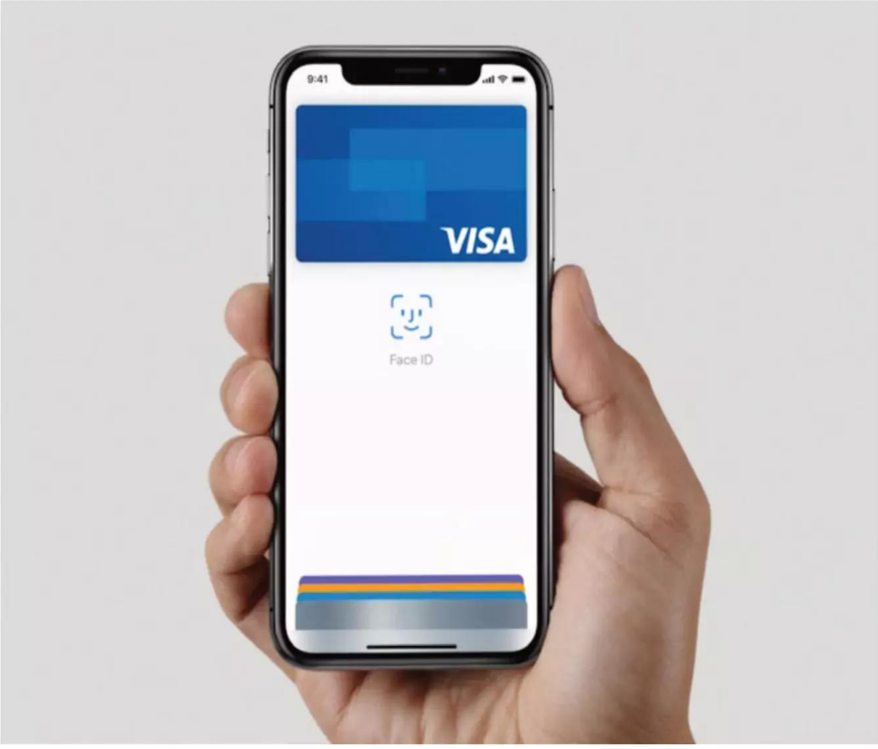
Apple's Services have become more and more popular, but the underlying systems have some weaknesses that could really improve life for users.

BY DAN MOREN

Services: they're so hot right now. Apple beat its self-stated goal of doubling Services revenue in 2020 with time to spare, and the company has not only recently announced that it will be launching a new service, Apple Fitness+ (go.macworld.com/afit), but also finally elected to offer a competitively priced bundle (go.macworld.com/app1) of its many services to consumers.

With all of that said, there are some elements of Apple's services that are still a bit lackluster, and more than a few of them

IMAGE: iSTOCK



Apple's payment systems need to offer more options.

are parts of the very systems on which the company and its users rely. In the same way that you might want to look to patching a foundation before worrying about painting the walls, there are a few places where Apple might want to shore up its fundamentals before launching into something new.

PAY FOR THIS, PAY FOR THAT

As someone who spends a lot of time buying software from Apple's various app stores for both personal and business use, I find myself continually annoyed at Apple's poor support for multiple payment methods in the iTunes and App Stores.

Yes, you can input multiple credit cards into your Apple ID profile and even use Apple Pay—which is all well and good until it comes time to check out. Then, the App Store doesn't allow you to pick which payment to use, instead relying on whatever your primary payment method is and then, only if that fails, trying your backup methods.

So, for example, if I want to buy an app for work, I have to go into my account settings and re-order my payment methods in order to use my work credit card. The end result? Nobody really does it, because it's a lot of friction for what should be a simple experience.

Look, associating a single credit card with your iTunes account has been the way Apple has done business for 17 years. Why stop now? The company loves to tout the number of credit cards it has tied to accounts as a metric of its Services success, and removing friction in payment is one of the chief ways in which it pitches the ease of use of the App Store for consumers and developers alike.

What's most frustrating here is that Apple's manner of using Apple Pay doesn't match the way it's used pretty much anywhere else. When I order food for delivery or request a ride, the Apple Pay option lets me pick any card in my Wallet. Why can't I have the same option when I'm downloading apps, music, or movies? (And, for that matter, why can't that be extended to third parties selling digital goods—but that's a piece for another time.)

ALL IN THE FAMILY

Apple's Family Sharing system is, at first blush, a great benefit, allowing you to share content, services, storage space, and so on with the rest of your family. But it's got its own flaws, too, not least of which is that because of the aforementioned lack of multiple payment systems, everything purchased for the family must go through one account when Purchase Sharing is enabled.

That might work fine in a lot of situations, but it hardly deals with cases in which different adult members of a family might want to purchase things separately, for any of a variety of reasons (especially, say, where adult children have remained on their parents' Family Sharing plans, which is going to increasingly be the case).

Apple has taken a very one-sizes-fits-all approach to Family Sharing, as with its payment methods, and that has meant an increasing number of cases with people butting up against limits that can at times seem arbitrary.

STORAGE WARS

Finally, it's time for the annual beating of the iCloud storage drum: what's up with

Family Sharing lets you share content, services, storage space, and so on with family members.

the 5GB limit? With Apple's recent unveiling of its Apple One bundle, these storage plans have started to look even more long in the tooth. The free 5GB storage is the same as it was in 2011, when iPhones maxed out at 64GB, and most people had only 16GB or 32GB models. Meanwhile, the 50GB and 200GB tiers and prices have not changed in five years.

Here's the thing: iCloud is a linchpin of Apple's holistic product strategy. From backup to email to iMessage and photos, Apple's devices rely on iCloud to function. Moreover, many third-party apps take advantage of the system as well, to readily make their data available across all of a user's devices. It helps make the experience seamless, which is definitely something that Apple likes to brag about.

But 5GB is increasingly not enough for the average person. I've had to walk more than a few family members through upgrading their plans because their iPhones or iPads chastised them for not having enough cloud storage space to back up their precious photos without ponying up the princely sum of $1 a month. Is that a lot? Not particularly, but the attitude of "nice photos, shame if something were to happen to them" feels very much against the image that Apple is intending to promote.

Apple's got a few levers it could pull here, from upping the base storage amount to making device backups not count against your storage limits. But to keep things as they are now feels very much like cheap nickel-and-diming for which Apple would all too gladly criticize one of its competitors. ■

Browse
Locations
iCloud Drive
On My iPad
Recently Deleted
Favourites
Desktop
Documents
Tags
Work
Personal
Trips
Expenses
Projects
School
Finder
MacBook Pro

iCloud storage: What's up with that?

EXTERNAL STORAGE DEVICE

SABRENT XTRM-Q SSD: 8TB OF POCKET-SIZED THUNDERBOLT 3/USB STORAGE

BY JON L. JACOBI

Macworld EDITORS' CHOICE

Sabrent's pocket-sized Rocket XTRM-Q external SSD (go.macworld.com/xtrm) offers the kick-in-the-pants transfer speed (up to 10Gbps) provided by the Mac's Thunderbolt 3, while adding the ability to operate via USB on computers that lack it. It is also available in a hitherto unheard of capacity of 8TB. Nice. Very nice.

DESIGN AND SPECS

The Rocket XTRM-Q (extreme/QLC) is a small, handsome, dark-slate colored monolith measuring approximately 4 x 1.75 x 0.5 inches. It weighs around 5 ounces

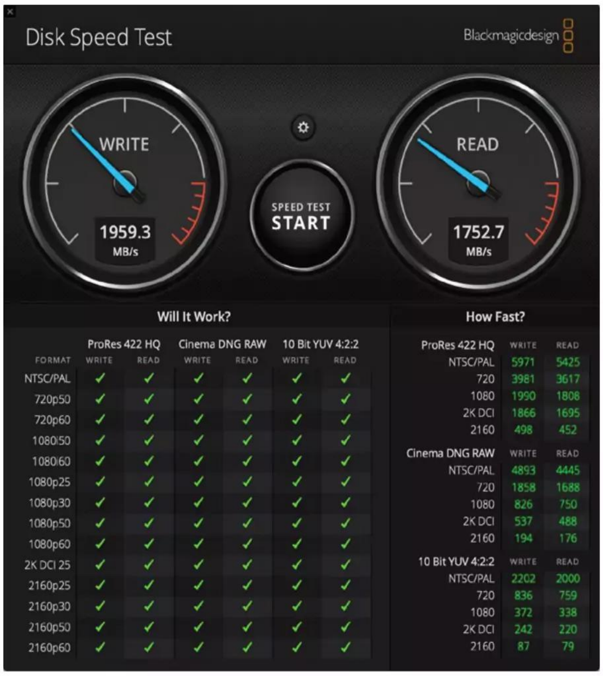
IMAGE: SABRENT

and there is a Type-C port on the business end.

Note that many companies (including Sabrent) advertise drives as USB-C and leave it at that. USB-C indicates USB connectivity and a Type-C port, but tells you nothing about performance. It might be SuperSpeed USB 5Gbps, it might be SuperSpeed USB 10Gbps or SuperSpeed USB 20Gbps. As noted, the XTRM-Q is SuperSpeed USB 10Gbps, née USB 3.x Gen 2, though you can only infer this from the Sabrent website's mention of 900MBps transfers. Sigh.

You can purchase the Rocket XTRM-Q in 500GB ($170), 1TB ($220), 2TB ($360), 4TB ($830), and 8TB ($1,600) flavors. Yes, the 4TB and 8TB are pricey, but the price per gigabyte is actually lower than the 1TB model's. You can of course get 4TB or 8TB of external storage for far less money, but not with the speed and convenience of a portable NVMe SSD.

The Rocket XTRM-Q is a small, handsome, dark-slate colored monolith.



Will It Work?

	ProRes 422 HQ		Cinema DNG RAW		10 Bit YUV 4:2:2	
FORMAT	WRITE	READ	WRITE	READ	WRITE	READ
NTSC/PAL	✓	✓	✓	✓	✓	✓
720p50	✓	✓	✓	✓	✓	✓
720p60	✓	✓	✓	✓	✓	✓
1080i50	✓	✓	✓	✓	✓	✓
1080i60	✓	✓	✓	✓	✓	✓
1080p25	✓	✓	✓	✓	✓	✓
1080p30	✓	✓	✓	✓	✓	✓
1080p50	✓	✓	✓	✓	✓	✓
1080p60	✓	✓	✓	✓	✓	✓
2K DCI 25	✓	✓	✓	✓	✓	✓
2160p25	✓	✓	✓	✓	✓	✓
2160p30	✓	✓	✓	✓	✓	✓
2160p50	✓	✓	✓	✓	✓	✓
2160p60	✓	✓	✓	✓	✓	✓

How Fast?

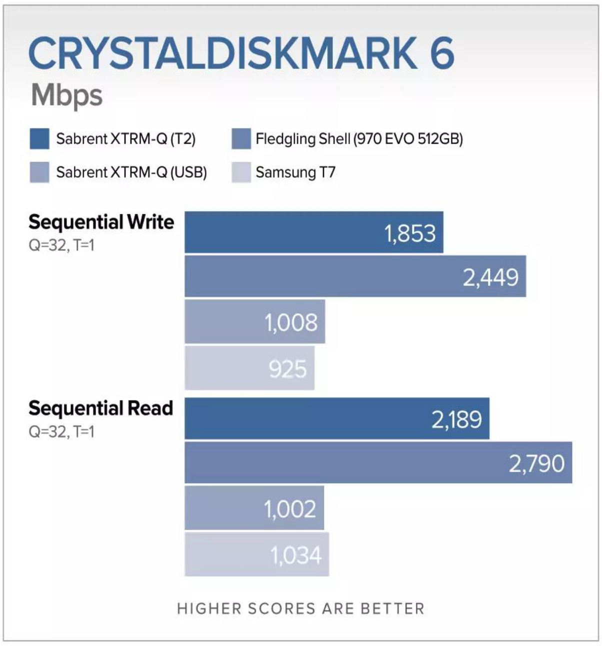
ProRes 422 HQ	WRITE	READ
NTSC/PAL	5971	5425
720	3981	3617
1080	1990	1808
2K DCI	1866	1695
2160	498	452
Cinema DNG RAW	**WRITE**	**READ**
NTSC/PAL	4893	4445
720	1858	1688
1080	826	750
2K DCI	537	488
2160	194	176
10 Bit YUV 4:2:2	**WRITE**	**READ**
NTSC/PAL	2202	2000
720	836	759
1080	372	338
2K DCI	242	220
2160	87	79

Though hardly the fastest external NVMe SSD we've tested, the XTRM-Q is the only one that also supports USB. And almost 2GBps is nothing to sneeze at.

The SSD inside the XTRM-Q is Sabrent's own Rocket Q NVMe (go.macworld.com/rktq), which employs QLC (Quad-Level Cell/4-bit) NAND and a Phison controller. The warranty is for 5 years and Sabrent includes both Thunderbolt 3 and Type-A to Type-C cables. The former are a rather pricey item, so good on Sabrent.

PERFORMANCE

I tested the 8TB XTRM-Q via both Thunderbolt 3 and SuperSpeed USB 10Gbps. According to Sabrent, the 8TB



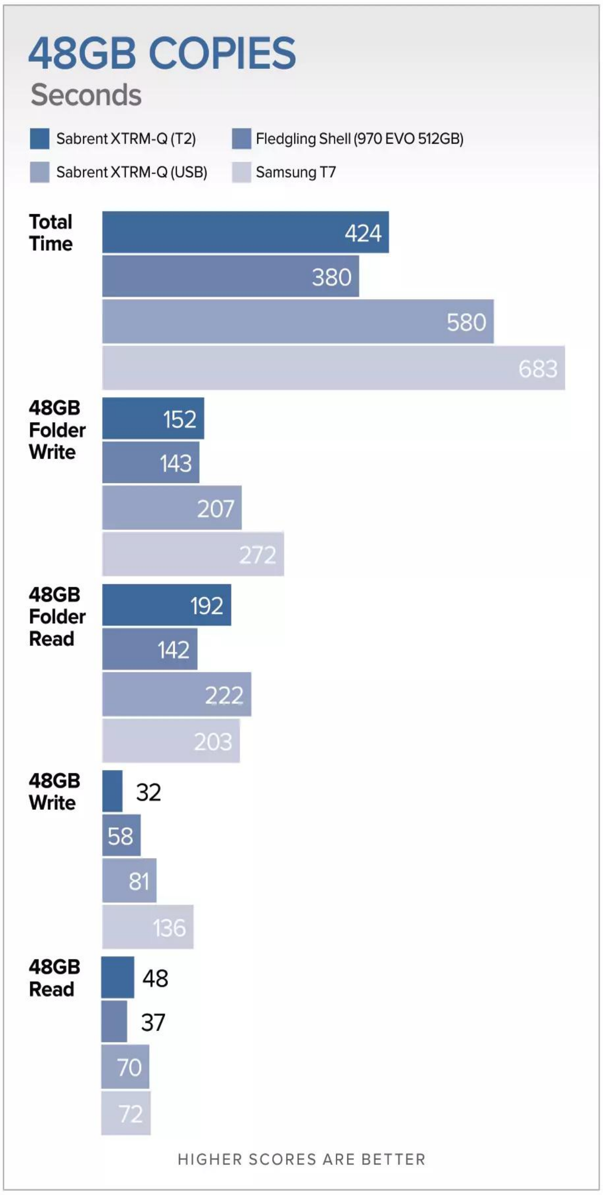
The XTRM-Q was a good performer via both Thunderbolt 3 and USB 10Gbps, if not as fast in every test as its competitors.

model treats 25 percent (which works out to 2.5TB) of the QLC NAND on board as SLC cache, so there was no chance it would slow down during long writes. Though as free space declines, so does the amount of NAND allocated as cache.

Blackmagicdesign's Disk Speed rating of the XTRM-Q's sustained read and write performance, is not the fastest we've seen, but still nice.

CrystalDiskMark 6 also sees the XTRM-Q as quite fast, if not as fast as the Thunderbolt-only Fledging Shell (go.macworld.com/fshe). On the other hand, as you'll see in a chart or two, the 1TB Shell slowed down drastically on the 450GB write.

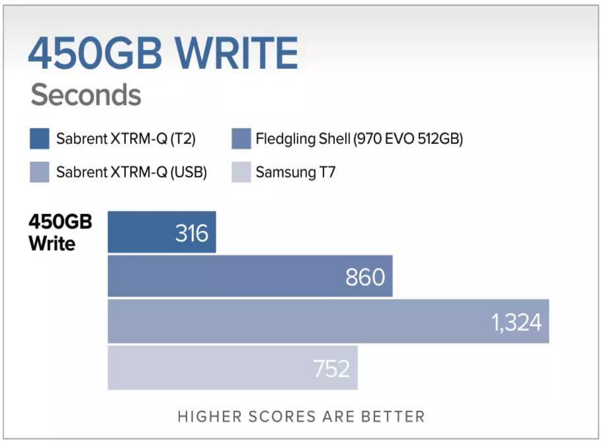
In our real world 48GB transfer tests, the



As you can see, the XTRM-Q wasn't the fastest drive among the four, however, it's also the only one that can be used with both Thunderbolt 3 and USB.

XTRM-Q proved a decent Thunderbolt 3 performer, and a very good performer via USB 10Gbps.The Fledging Shell is Thunderbolt 3-only and the Samsung T7 (go.macworld.com/sam7) is USB-only (10Gbps).

The 450GB write test is testament to



This test highlights not only the XTRM-Q 8TB's excellent sustained transfer abilities, but the advantage of Thunderbolt 3 over USB 10Gbps. Note that the 500GB and 1TB versions will post slower times due to less cache.

what having 2.5TB of NAND cache will do for you. The amount of cache will shrink as the drive starts to fill up, and the 1TB and 500GB versions of the XTRM-Q will likely slow down before this test is finished due to having less than 450GB of cache. We did not have those capacities to test.

All in all, you'll like the 8TB XTRM-Q's performance. USB drives cross platforms, but so far this is the only external USB SSD we've tested that also offers speed of Thunderbolt 3. No compromises is a good thing.

Testing is performed on Windows 10 64-bit running on a Core i7-5820K/Asus X99 Deluxe system with four 16GB Kingston 2666MHz DDR4 modules, a Zotac (Nvidia) GT 710 1GB x2 PCIe graphics card, and an Asmedia ASM2142 USB 3.1 Gen 2 (10Gbps) card. Also on board are a Gigabyte GC-Alpine Thunderbolt 3 card and Softperfect's Ramdisk 3.4.6, which is used for the 48GB read and write tests. BlackMagic's Disk Speed testing was performed on a similarly configured machine.

All testing was done with the drive formatted to NTFS (Windows) and HFS+ (Mac) to achieve best-case results. To cross platforms, you'll need to either format the drive to exFAT (with slower small file writes), or employ additional file system drivers. We did not enable write caching for the drive as recommended by Sabrent. You can squeeze extra performance out of the XTRM-Q by doing this.

★★★★½

XTRM-Q Thunderbolt 3/USB SSD

PROS

- Fast.
- Dual Thunderbolt 3 SuperSpeed USB 10Gbps interface.
- Available in up to 8TB of capacity.

CONS

- Runs a bit warm.
- Pricey.

PRICE

$1,399

COMPANY

Sabrent

BOTTOM LINE

If you want the performance of Thunderbolt 3, but need to retain compatibility with USB-only computers, then the XTRM-Q is what you want. 8TB that fits in a shirt pocket ain't half-bad either, even if it means removing a substantial number of Benjamins from your wallet. ■

UNINTERRUPTIBLE POWER SUPPLY

TRIPP LITE SMARTPRO LINE-INTERACTIVE SINE WAVE UPS (SMC1000T): HIGH-END UPS, RELATIVELY LOW-END PRICE

BY GLENN FLEISHMAN

Macworld EDITORS' CHOICE

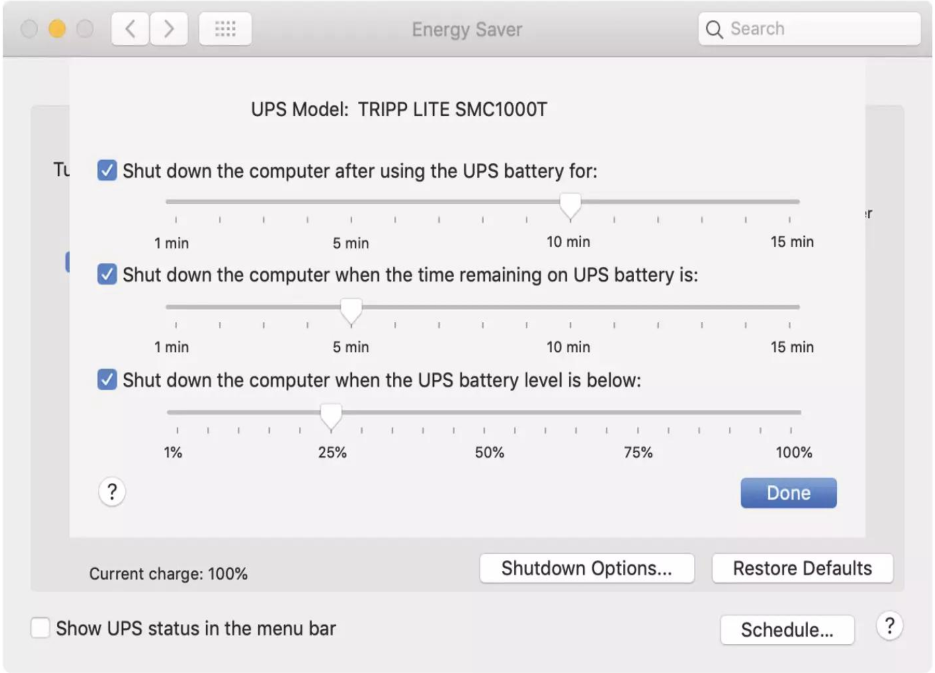
The Tripp Lite SmartPro SMC1000T packs all the best features needed for high-performance and gaming PCs into one heavy, well-designed uninterruptible power supply (UPS). With the ability to support up to 650 watts of attached gear, that should suffice for nearly the most tricked-out system. If your system adds up to a more modest 325W, the battery-backup and power-conditioning system can run for nearly 15 minutes; even at full load, it can keep devices energized for a whopping five minutes.

IMAGE: TRIPP LITE

Tripp Lite offers management software only for Windows (and it requires Java), but the hardware supports macOS’s built-in UPS tools. Plug in the SMC1000T via USB, and with either the Windows software or using macOS’s Energy Saver preference pane, you can configure under what terms you want your device to shift into automatic shutdown: run for a certain amount of time or until the battery depletes to a certain level, and then kick in.

For an average computer system that draws 200 to 400W in an area with frequent brief outages lasting up to minutes, the SMC1000T can keep you in full operation across that time. (Look up the specs on devices or at manufacturers’ sites for all the equipment you want to connect to the battery-backed outlets and add their wattage together to get a maximum load factor.)

While this model isn’t aimed at low-power-consumption network gear and the price tag might dissuade you, it could power a Wi-Fi base station and broadband modem for two to four hours, depending on the devices’ specs, which might be worth the price in avoiding lost work.



UPS Model: TRIPP LITE SMC1000T

☑ Shut down the computer after using the UPS battery for:

☑ Shut down the computer when the time remaining on UPS battery is:

☑ Shut down the computer when the UPS battery level is below:

Current charge: 100%

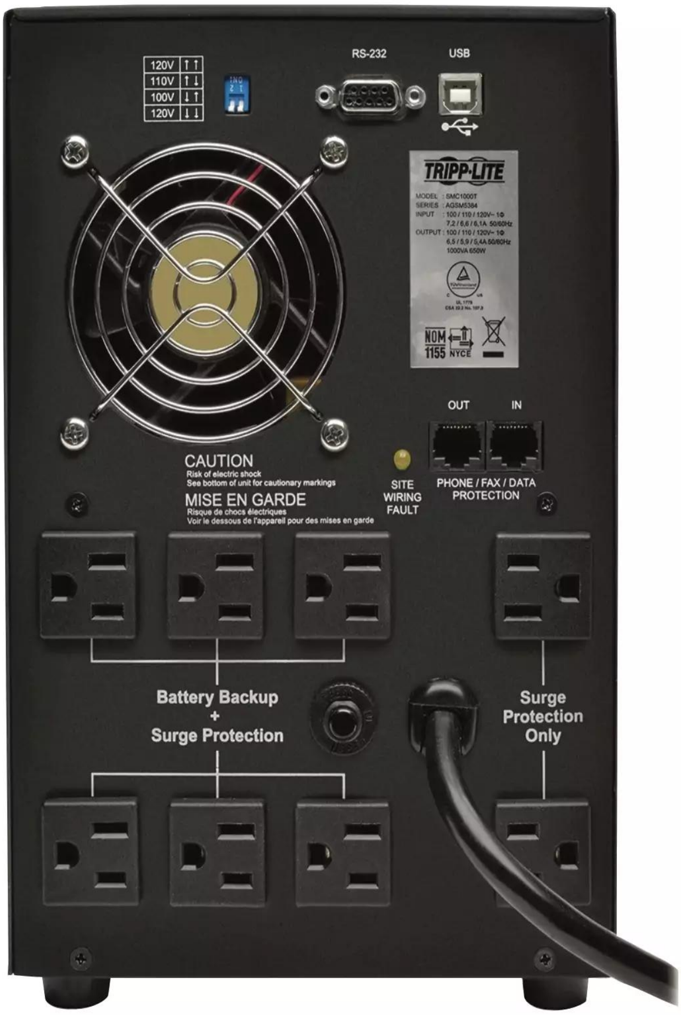
☐ Show UPS status in the menu bar

Tripp Lite offers only Windows software, but its SMC1000T UPS will gracefully shut down a Mac based on settings in the macOS Energy Saver preference pane.

This Tripp Lite unit has two features that modern PC users will find somewhere between very useful and almost mandatory. It’s a line-interactive UPS with pure sine wave output. While those options may sound jargony, they have a direct impact on the life of the UPS and potentially on the longevity of your computer’s power supply.

A line-interactive UPS conditions all the power that passes through it on route to devices plugged into its outlets. (The SMC1000T has two surge-protector outlets; the other six outlets have both surge protection and power backup.) Internal circuitry lets the UPS perform a number of power adjustments for power sags and overages, among other glitches, without tapping into the battery at all, which increases the battery's lifetime. Surge-protection components shed transient high voltages. The battery gets used only when power dips too low or rises too high for adjustment or stops flowing altogether.

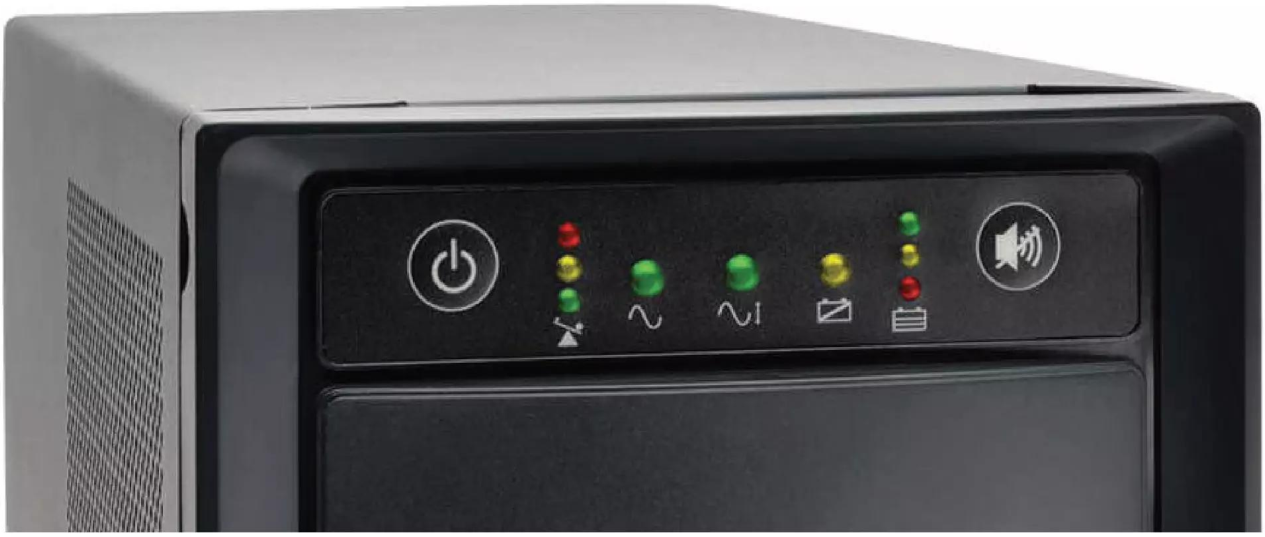
Because the UPS is always managing power flow, the switchover in an outage is rated at 4 milliseconds by Tripp Lite, typically well within tolerances required to keep computer gear running without a hiccup. Standby UPSes take longer, from 5 to 25ms depending on the model and the particular kind of outage factors, which might not keep a device operating while the battery kicks in.


RS-232
USB
120V
110V
100V
120V
TRIPP·LITE
OUT
IN
CAUTION
Risk of electric shock
See bottom of unit for cautionary markings
MISE EN GARDE
Risque de chocs électriques
Voir le dessous de l'appareil pour des mises en garde
SITE WIRING FAULT
PHONE / FAX / DATA PROTECTION
Battery Backup + Surge Protection
Surge Protection Only

Six of the Tripp Lite's SMC1000T's eight outlets are connected to its battery; the other two offer only surge protection.

The pure sine wave output lets the UPS exactly simulate the clean up and down cyclical waveform of normal electrical system alternating current (AC) power. Some UPS models produce a simulated sine wave, instead. The simulation is chunky, moving from voltage range to voltage range in big steps, and costs less than pure sine wave technology, so it's often found in cheaper models.

A chunky sine wave isn't a problem for older computers and a variety of not-very-sensitive equipment, like many kinds of networking hardware. For modern computers with active power factor correction (PFC), however, which allows them to function at a variety of voltages, it's a real issue. A stepped sine wave fed into an active PFC power supply can cause a high-pitched whine and



A straightforward LCD display would be better than needing to decipher what the SMC1000T's combination of printed graphics and LEDs are trying to tell us.

prematurely wear its components or even cause it to fail.

With expensive PCs, sensitive audio gear, or any equipment that needs precision, a pure sine wave is worth the extra price, particularly if you think you might have recurring sustained outages that could last tens of seconds or into minutes. While a power-supply failure isn't certain, it's possible, and that would result in computer downtime and even component damage.

Tripp Lite also includes a site-wiring fault LED on the back of the unit that illuminates for a number of serious problems, such as a faulty ground or an overloaded neutral. If you were to buy this unit and that yellow light turns on when it's plugged in, disconnect it and call an electrician immediately.

A FEW RESERVATIONS

The SMC1000T has a few drawbacks. It relies on a series of tiny printed graphics and LEDs to indicate status, which require consulting the included manual to decode. Given its weight—36 pounds—it's likely to be placed on the floor, so you might need a magnifying tool on your smartphone and its flashlight to understand which LED is lit under which icon.

For instance, the green, yellow, and red Outlet Load Level LEDs light up corresponding to light load (green), which is within specs; medium (yellow), which is *also* within specs but closer to the maximum; or overload (red), which is overload and devices should be powered down and unplugged immediately—an audible alarm sounds, too. (An alarm also goes off when power is out or if the battery is nearly depleted.)

The SMC1000T will fully deplete its battery if there's an outage and an electrical draw continues from attached equipment, and then automatically begin recharging when utility power returns. It will reset itself when its battery is fully discharged, though, so even if there's utility power, it doesn't pass electricity through to connected devices. You must manually press and hold the Standby button to re-enable power passthrough.

Because of the size of the battery and heat dissipation required, the UPS has a variable-speed fan of the size typically seen on tower PCs, and it runs continuously. I found it quiet in normal operation. (Beware a number of online reviews that seem to be of this desktop-style model that mention a loud fan: the reviews include features not present in the SMC1000T, but rather in a rack-mounted version with a similar product ID, and I expect those reviews are attached to the wrong device.)

The outlets are also spaced relatively tightly in the back. This model isn't meant for wall warts, but for standard polarized 2-prong and grounded 3-prong plugs (in the NEMA 5-15P style).

Tripp Lite doesn't include warranty information in the box, but it does include a registration card that lets you extend the included two-year warranty against manufacturing defects to three years, and which has links to the full warranty and insurance information.

An insurance policy covers the UPS if operated within specs as well as any correctly attached gear up to $250,000—only replacement or repair is covered, so the dollar amount is largely extraneous. Only the original purchaser is covered, and a warranty claim must be filed within 30 days of purchase.

★★★★½

Tripp Lite SmartPro SMC1000T line interactive UPS

PROS

- Pure sine-wave power output for best use with modern computer power supplies.
- Line-interactive approach means fast power switchover in outages.
- Long run time on midrange PC configurations (or home networking gear).

CONS

- Software available only for Windows (Java required).
- Slightly expensive on a per-watt basis.
- No LCD display.

PRICE

$290

COMPANY

Tripp Lite

BOTTOM LINE

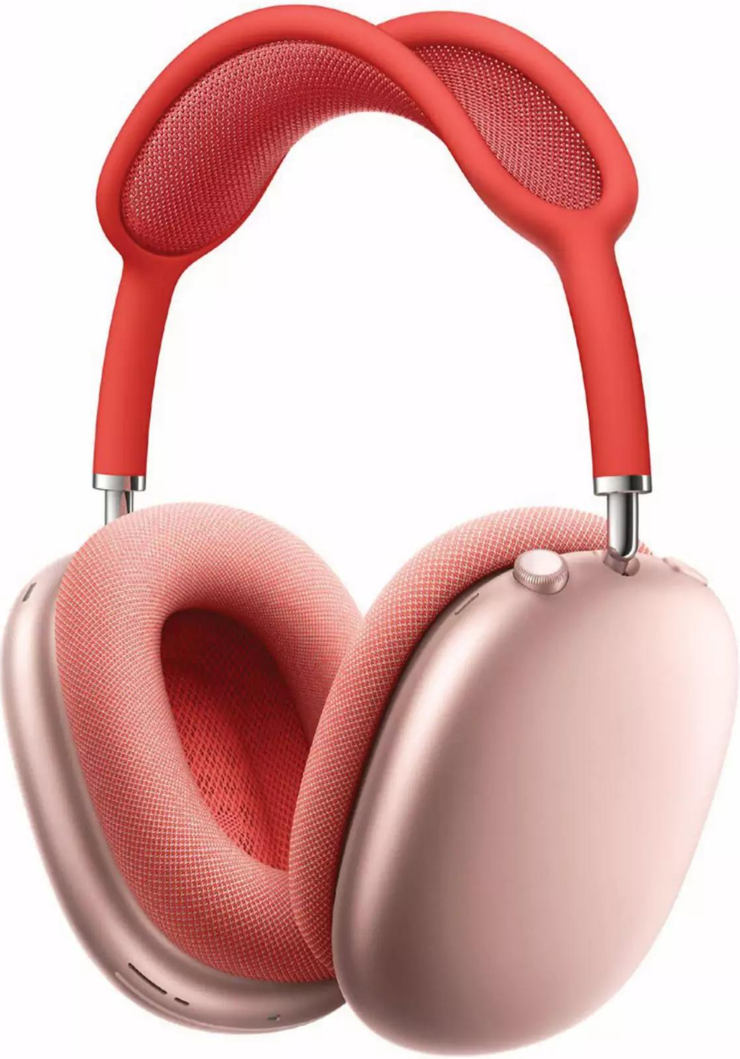
If you have a mid- to high-wattage computer, display, and peripheral system that you want to offer the highest protection to with a desktop-oriented UPS, the SMC1000T offers nearly every feature you could want, and all of the important ones. With the right kind of power conditioning, pure sine wave output, and long battery runtime, this Tripp Lite model could help you significantly in a region with recurring outages or irregular power. ■

Hot Stuff

What we're raving about this month

APPLE AIRPODS MAX

apple.com



The latest member of Apple's headphone line brings the technology of its popular AirPods earbuds to a new over-ear design. The cups are wrapped in a "breathable knit mesh canopy" that spans the stainless-steel headband and is designed "to distribute weight and reduce on-head pressure." A Digital Crown brings volume control as well as playback and other features. The headphones feature 20 hours of battery life on a single charge with noise cancellation and spatial audio enabled. The included Smart Case puts the AirPods Max into an ultralow power state to preserve battery between uses.

—MICHAEL SIMON

KYVOL CYBOVAC S31

kyvol.com

The Cybovac S31 can vacuum and mop at the same time. It holds 110ml of water and distributes it to the attached microfiber cloth as it drags along the floor. It's adequate for semi-regular maintenance cleaning, but it won't eliminate the need for your stick mop. The Cybovac S31 has a 4.3L self-emptying dustbin that can hold up to about 60 days' worth of dust before you need to replace the disposable dustbag inside it. The dustbin doubles as the robot's charging dock, providing about four hours of runtime per full charge. **–MICHAEL ANSALDO**

Hot Stuff

PANASONIC HOMEHAWK WINDOW CAMERA

shop.panasonic.com

This security camera mounts directly to the inside of your window, with its lens looking out on the exterior of your property, solving a number of problems related to setting up an exterior home security camera. To mount the camera you place it on the window and, while pressing it firmly against the glass, pull up a “lock” lever to secure it. The HomeHawk has a wide 150-degree viewing angle and captures video in 1080p resolution. It detects motion and supports person detection and custom detection areas. It even has color night vision, thanks to a proprietary, high-sensitivity CMOS sensor. **–MICHAEL ANSALDO**

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WHEN YOU'RE **BUZZED**, YOU GET IDEAS. LIKE ASKING EVERYONE INSIDE THE TACO TRUCK WHAT **DRIVING** AROUND IN A KITCHEN **IS** LIKE AND THEN ORDERING 22 TACOS WITH EXTRA GUACAMOLE AND ALL THE CHEESE FOR EVERY **DRUNK** PERSON IN LINE. BAD IDEA FOR YOUR WALLET, BUT NOT AS BAD AS **DRIVING** HOME BUZZED.

NHTSA

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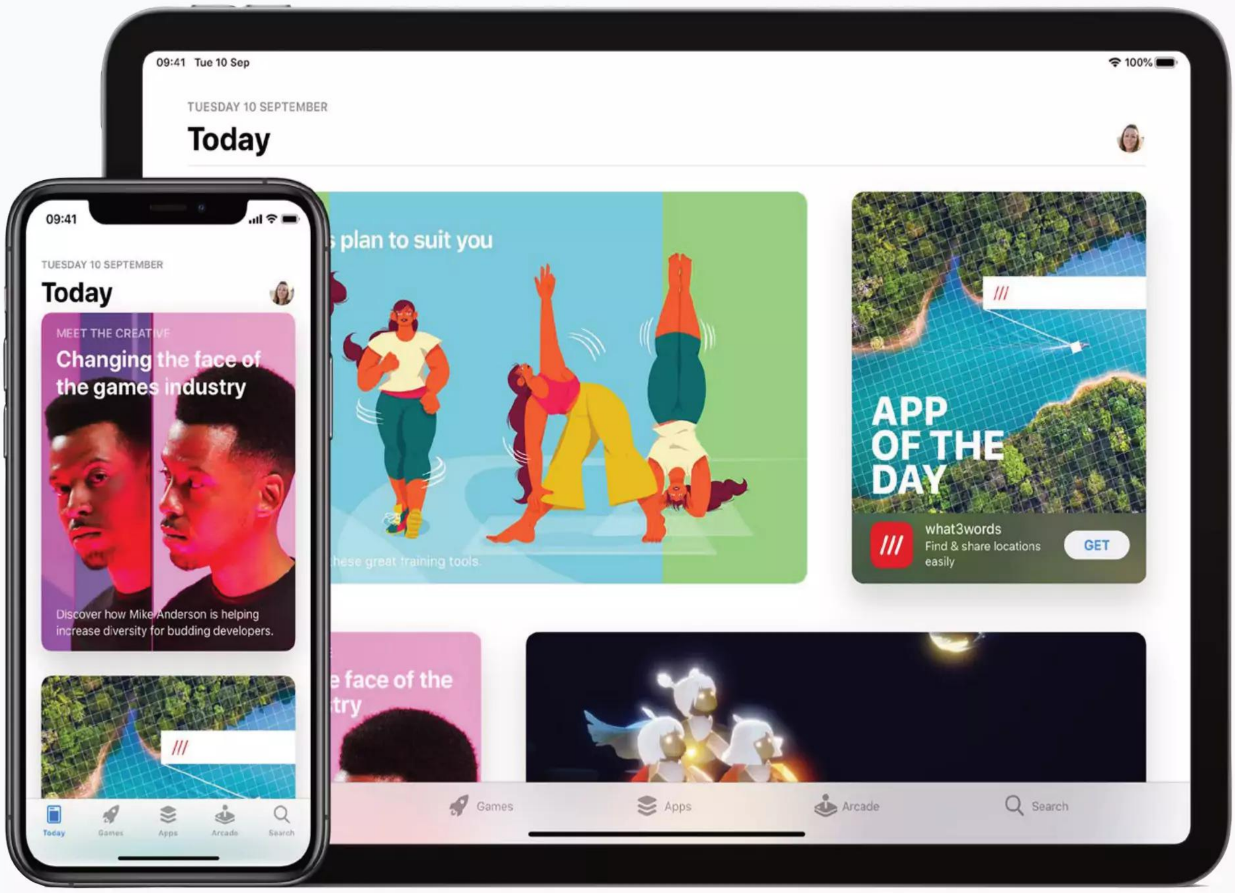
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Today
plan to suit you
APP OF THE DAY
what3words
Find & share locations easily
GET
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Today
MEET THE CREATIVE
Changing the face of the games industry
Discover how Mike Anderson is helping increase diversity for budding developers.
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Apple's App Store priorities for the year ahead

Apple has a lot to look forward to, but the App Store may get more attention than usual.

BY DAN MOREN

As 2021 peeks its head over the horizon (and with it, hopefully, an upward swing at last), it's time to cast our glances to the year ahead.

While Apple has no shortage of priorities for the next 12 months, one area that seems as though it might get more attention than usual is the company's main digital storefront, the App Store. Services continue to be good business for Apple, and the App Store is a major component of that market, but it's also not without its challenges.

Apple has already instituted some changes to its long-running App Store

IMAGE: APPLE

practices, and recent developments have also made it clear that further changes are likely on the way. So what do we have to look forward to in 2021?

CUT IT OUT

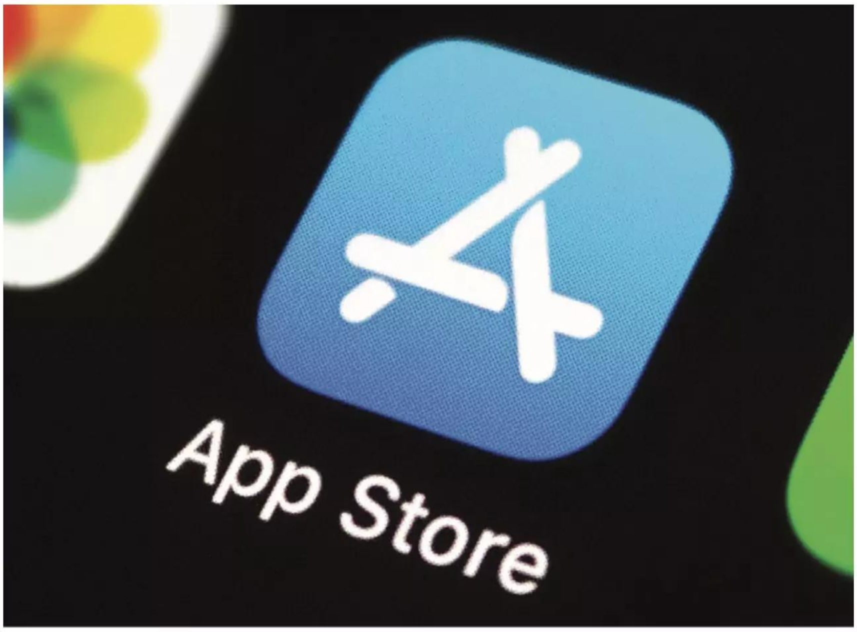
Apple's newly unveiled Small Business Program aims to change one longstanding number: 30 percent. That's the cut of App Store proceeds that Apple has taken since the store's inception. But in November Apple announced (go.macworld.com/ctrt) that developers who earn less than $1 million in proceeds in a given calendar year will be eligible to apply for a reduction of Apple's portion to just 15 percent, with some caveats.

That's a big deal. Some analysts say that up to 98 percent of the developers on the App Store earn less than $1 million; of those that cross that line, most are large companies that earn far in excess of the number. But it does leave questions about the ones stuck in the middle.

One catch about the program is that if you hit that $1 million in a calendar year, the remainder of your year's proceeds jump back up to that 30 percent mark—*and* you have to spend the next year at 30 percent. Only if the following year's revenue drops below the $1 million mark are you eligible to apply for the 15 percent deal the following year.

That ping-ponging has some developers worried and has even led to suggestions that developers might pull their apps from the store late in the year if their income approaches that $1 million mark.

Is this a test balloon on Apple's part? It's hard to say. The 30 percent cut is largely standard across not only the mobile industry, but also in other digital storefronts like game consoles. Apple's move may shine a brighter spotlight on those that stick with the 30 percent number across the board. But though Apple can pretty easily weather this reduction in their App Store income, competitors—such as console makers,



who often sell the hardware at a loss and recoup their investment via these fees—may struggle.

But you can bet that Apple will be keeping a close eye on how this program goes over the next 12 months, not only for developers, but also for itself. In no small part because the App Store has some related challenges ahead as well.

ANTITRUST, BUT VERIFY

Like the rest of Big Tech, Apple has found itself in the crosshairs of legislators and government regulators this past year. In Apple's case, it's because of the App Store and what some have argued are anticompetitive practices in the way the business is run.

Apple's lowering of its cut might be an attempt to slip away from this scrutiny, but given that the complaints from developers and customers only partially involve the amount of money paid, and instead deal more with Apple's rules and restrictions on what can and can't be done within the store itself, the reduction to 15 percent probably won't do much to permanently silence critics.

Add in a new government administration that might be more friendly to reining in some of the Big Tech companies, and it's quite likely that the App Store is due for more attention, not less, as 2021 progresses. That said, the Small Business Program might only be Apple's first foray into addressing these kinds of concerns–perhaps there are more changes to come.

RUN EVERYWHERE

Finally, on the technical side, we've moved into a new era, one where apps developed for iOS can be run on Macs built around Apple's own processors. This means that app creators now have decisions to make about how and whether to target Macs as potential markets for their products.

So far, the iOS apps that have made their way to M1-based Macs have mostly been on the underwhelming side—they really are nothing more or less than transplants from the mobile side, with all of the pitfalls and shortcomings that accompany the move to a platform with a fundamentally different interaction model.

But the path forward is there. Apple's Mac Catalyst system provides one option for creating iOS apps that behave like better Mac citizens, and the company has pointed to its SwiftUI system as the eventual direction for apps to run across all of its platforms. The transition to Apple silicon on the Mac is in its earliest stages, and developers will be taking a variety of different approaches to this new market. But 12 months from now, we—and the App Store—may well be in a very different place from where we are now. ■

AirDrop is great for the iPhone, iPad and Mac, but it can be even better. Here's how.

It needs UI improvements and wider range.

BY JASON SNELL

It's hard to believe that it's been nine years since Apple introduced AirDrop (go.macworld.com/adrp) as a part of Mac OS X Lion and iOS 7. I consider AirDrop to be one of Apple's best moves of the past decade. It's a feature I have used hundreds of times and have come to rely on to quickly exchange files and other information with my own devices and with the devices used by my friends and family.

But just because AirDrop is useful doesn't mean it couldn't be better. In fact, I would argue that it's been largely ignored the last few years, and could stand some major upgrades that would benefit users of iPhones, iPads, and Macs alike.

IMPROVING THE INTERFACE

The more I use AirDrop, the more I see how many ways its interface could be improved. AirDrop is generally a tap away on iOS, but on the Mac it's a bit more complicated to get there.

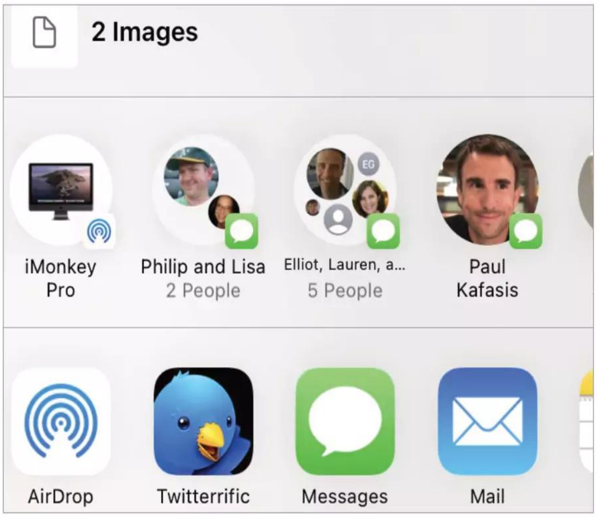
Most Mac users might still be transferring files via AirDrop by opening a new Finder window and choosing AirDrop from the Go menu, or typing Command-Shift-R. That was once the most prominent way of using AirDrop, but I prefer to select a file or files and quickly send them without opening a new Finder window.

There are currently two ways to do this. If you're selecting files in a Finder window, you can click the Share icon at the top of the window and choose AirDrop, then select from a list of nearby devices. But most of the files I'm AirDropping are actually out on my Desktop, so instead I control-click on a file and choose AirDrop from the Share submenu.

The first thing Apple should do is float AirDrop to the top level of the interface—providing an AirDrop icon right on Finder windows, and an AirDrop command at the top level of every contextual menu. Even better, those items should take a cue from iOS and offer frequently AirDropped devices in a submenu, so you can select a target and bypass the AirDrop window entirely.

An alternative would be for Apple to adopt the iOS interface for smart sharing suggestions, combining Messages and AirDrop in a single list, right within the sharing interface. That would be fine. My point is, I so frequently want to AirDrop files to one or two nearby devices—and I'd like to make it as easy as possible to kick off that process.

Though it's easier to select a target device on iPhone and iPad, those devices have their own limitations. iOS and iPadOS won't accept AirDrop transfers of different file types (go.macworld.com/fltp). If they aren't all the exact same file format, iOS (even iOS 14) will refuse the transfer, saying it "cannot receive all of these items at the same time." Instead, you have to transfer like items in groups.



iOS offers a quick sharing interface with specific destinations—including devices—via AirDrop.

This makes no sense. Surely the iPad and iPhone are sophisticated enough to accept the files and then ask the user what to do with them, or just save them into the Files app for later! Nine times out of ten I'm trying to transfer a bunch of items to the same destination—AAC, MP3, and WAV audio files into Ferrite Recording Studio on my iPad, for example—and there's no reason for iPadOS to refuse delivery. But it does, every time.

REDEFINING AIRDROP

I've been complaining about this for a few years now (go.macworld.com/cpln), but since Apple doesn't seem to be listening, I'm going to keep making noise: AirDrop needs to expand its range.

Currently AirDrop works as it was originally conceived: It's a short-range, direct transfer protocol that allows nearby devices to send files to one another without needing to be on the same network. And it does work very well in that regard.

But what makes AirDrop great is that it's easy. It doesn't require a network or server access or any cloud-based middleman. And that's why Apple should extend AirDrop's reach by redefining it as an easy way to transfer data with nearby people you know, whether or not they're standing right next to you.

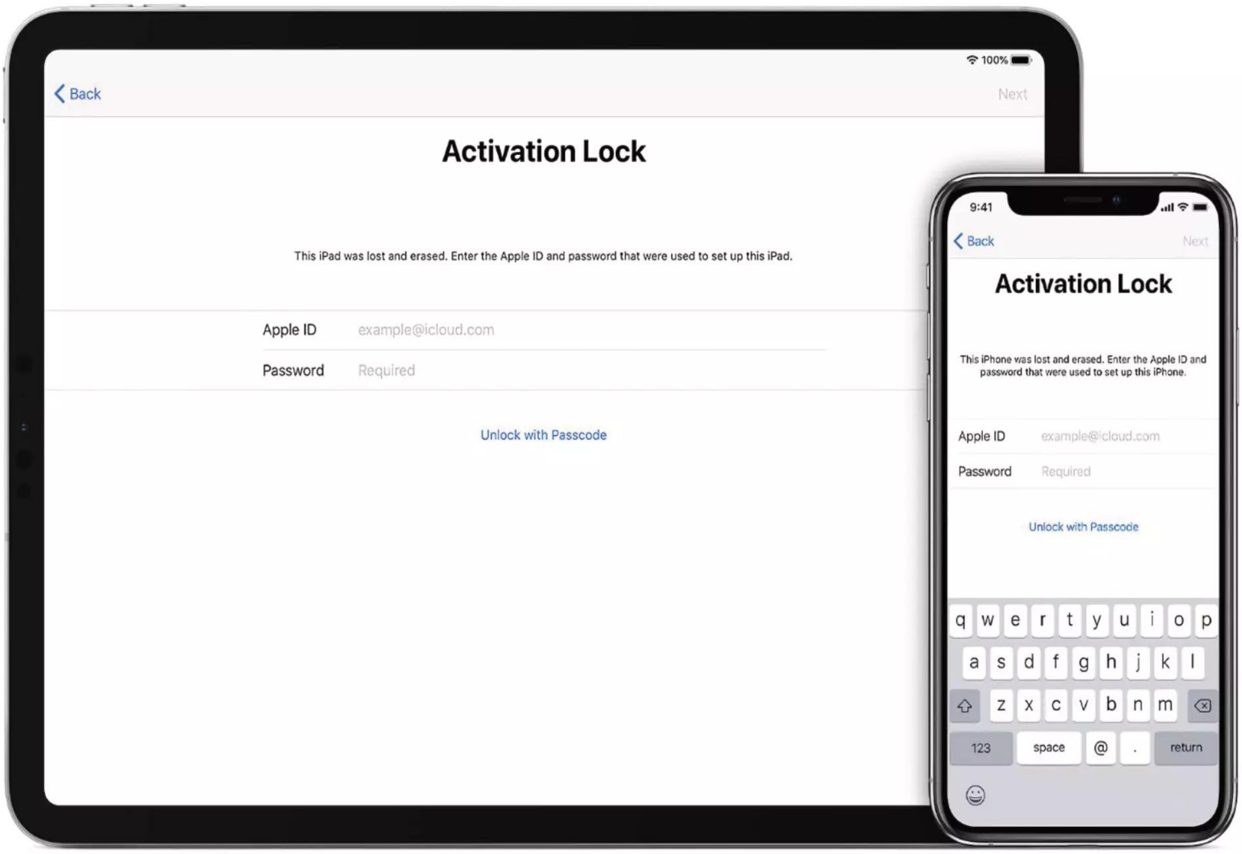
Apple already supports technologies that let you see other devices that are on your local network. Why not extend AirDrop to see familiar devices on your local network and allow quick point-to-point file transfers with them?

Let me give you a real-world example. I am frequently transferring files to my daughter's laptop from my iMac. Yes, I've got a file server in my office, so I could have her log in to the server and get the file. But AirDrop is so much easier! So when I've got a file to send to her, I walk back to her bedroom and tell her to come out to my office so I can AirDrop her the file.

This is silly. We're both on the same local network. I should be able to use that network to "AirDrop" the file to her.

Would this be a little out of bounds of the original premise of AirDrop? Yes, absolutely. But AirDrop is great. So great that it needs to expand. AirDrop is all about transferring data to nearby devices—and if Apple redefines "nearby devices" to include devices on my local network, it can make AirDrop that much more useful.

AirDrop has succeeded at taking a task that was previously messy and overcomplicated—getting a file transferred from one device to another—into something that's incredibly easy. Congratulations, AirDrop, you've done it! Time for you to do more. ■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This iPad was lost and erased. Enter the Apple ID and password that were used to set up this iPad.

This iPhone was lost and erased. Enter the Apple ID and password that were used to set up this iPhone.

Need to disable Activation Lock on an iPhone or iPad? Here are the 3 Apple-connected options to do so.

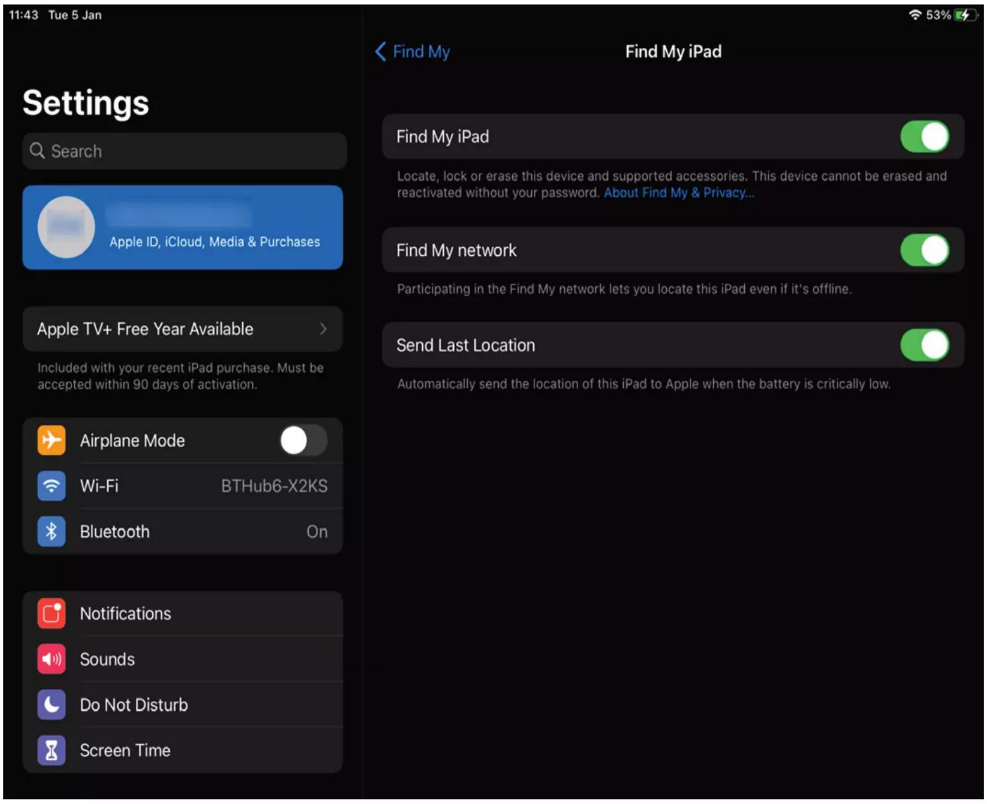
Apple will only perform a manual unlock in limited circumstances.

BY GLENN FLEISHMAN

Apple added Activation Lock (go.macworld.com/alck) several years ago to its iPhones as a theft deterrent, partly at the request of users and partly because law enforcement insisted it would reduce the incentive for grab-and-run theft. The idea was that even if an iPhone were stolen and wiped, the device would refuse to allow a new installation without the Apple ID and password for the account that originally registered it being available to unlock it.

Activation Lock is turned on by

IMAGE: APPLE



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Settings

Search

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Apple ID, iCloud, Media & Purchases

Apple TV+ Free Year Available

Included with your recent iPad purchase. Must be accepted within 90 days of activation.

Airplane Mode ○

Wi-Fi BTHub6-X2KS

Bluetooth On

Notifications

Sounds

Do Not Disturb

Screen Time

Find My

Find My iPad

Find My iPad ●

Locate, lock or erase this device and supported accessories. This device cannot be erased and reactivated without your password. About Find My & Privacy...

Find My network ●

Participating in the Find My network lets you locate this iPad even if it's offline.

Send Last Location ●

Automatically send the location of this iPad to Apple when the battery is critically low.

Activation Lock is turned on by enabling Find My in Settings.

enabling Find My in Settings → *account name* → iCloud. Disabling Find My requires the same Apple ID login that turned it on. It's now also available on an iPad, iPod touch, Apple Watch, and any Mac with the T2 security chip (go.macworld.com/t2sc) that enables Touch ID and other features. On a Mac, use the iCloud preference pane in macoS 10.14 Mojave and earlier and the Apple ID preference pane starting in 10.15 Catalina.

But there's a problem and it comes up frequently, including in our mailbag: if the original person who enabled Find My isn't available for whatever reason, the phone either can't be erased, can't be used effectively, or becomes a brick when wiped. (Some companies claim to have software that bypasses Activation Lock, and some criminal syndicates may be able to.)

That can be because you bought a phone from someone who didn't disable Find My, a former employee's company device used that person's Apple ID account (and potentially they left on bad terms or are no longer reachable), the owner dies or develops cognitive impairment, or even you—well, let's say someone—can't remember your Apple ID password and can't use recovery techniques to reset it, particularly with an older device and account. Apple provides a rundown (go.macworld.com/alck) on how to ensure you don't purchase a device that's locked.

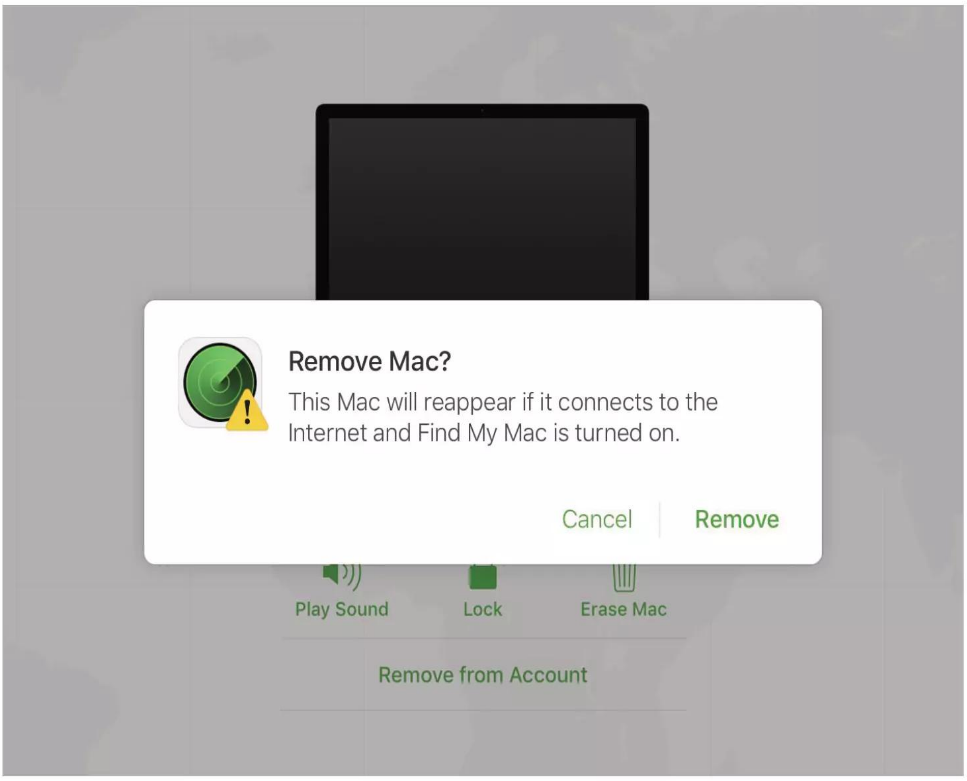
While some dubious third parties claim they can break Activation Lock without, it involves dubious or outright illegal methods (go.macworld.com/imth), although both criminals and people with legitimate ownership may try to employ those techniques.

Only three Apple-connected options are sure to work:

- Have the Apple ID account holder enter their password directly onto the device.
- If they're unavailable or it's easier, the account holder can log in to Find My at iCloud.com or one of their linked devices and remove the affected device. That disables Activation Lock as well.
- Failing all that, the original owner can contact an Apple Store, Apple Support, or an Apple-authorized third-party service center and reseller and provide a receipt showing their name, the device, date of purchase, and device serial number.

Apple doesn't advertise this last option, and it only works for the original purchaser. I've heard from people who have lost family members, like a parent or grandparent, and been unable to unlock a device even with a death certificate and legal proof they had the right and the original receipt, because they weren't the original owner.

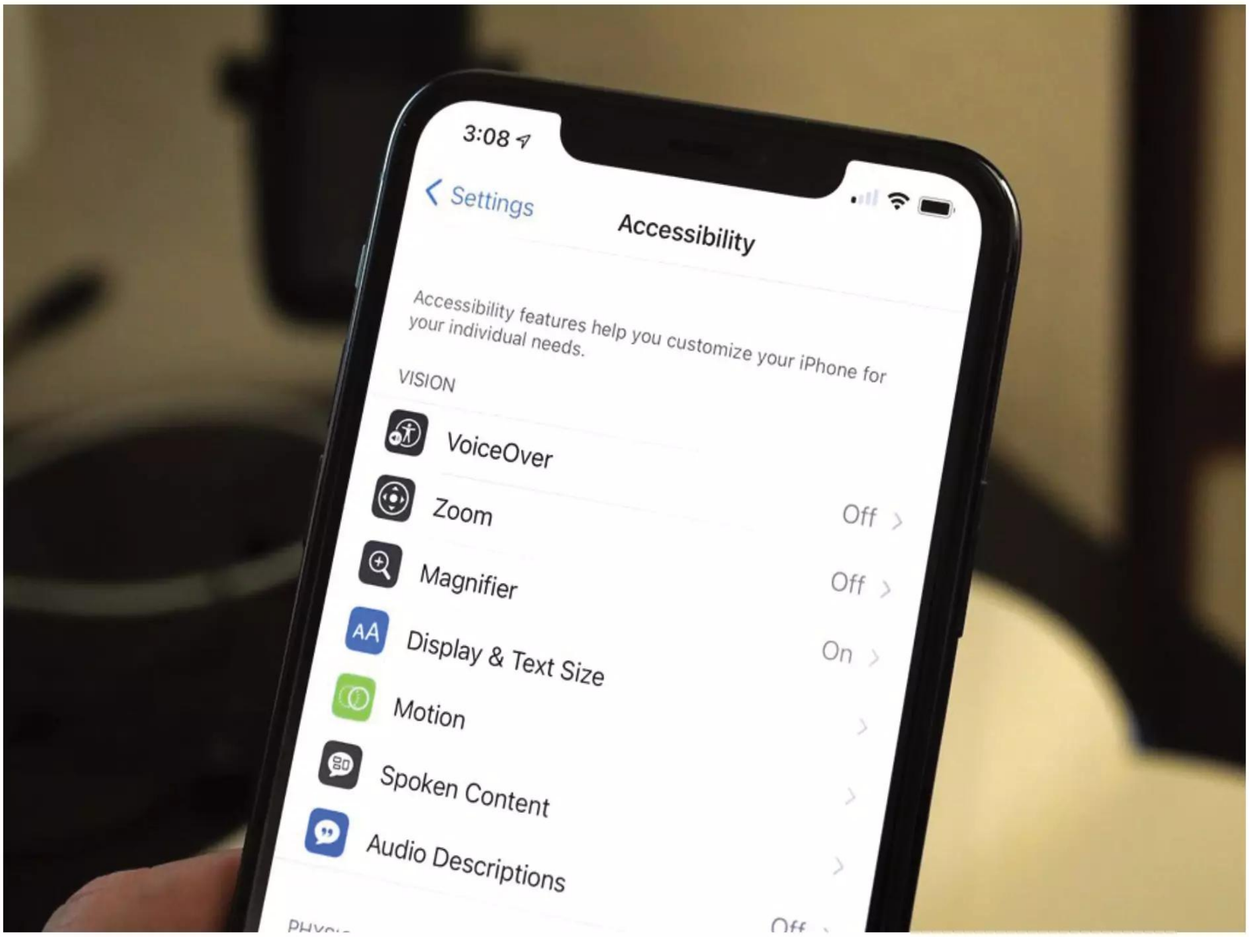
In the case of an ex-employee where you're responsible for trying to unlock a company-owned device, and you can't reach or don't want to get in touch with the former worker, a corporate receipt may work. Better yet, ensure that all devices that are returned are unlocked by an employee when they leave, are laid off, or are fired. Since they have to turn in the gear, add one item to the checklist. ■



Remove Mac?

This Mac will reappear if it connects to the Internet and Find My Mac is turned on.

You can remove a device from Find My through iCloud.com, too, disabling Activation Lock remotely.


3:08
Settings
Accessibility
Accessibility features help you customize your iPhone for your individual needs.
VISION
VoiceOver
Zoom
Off
Magnifier
Off
Display & Text Size
On
Motion
Spoken Content
Audio Descriptions
Off

Three great iOS 14 accessibility features everyone will want to use

Buried in the accessibility settings are some of iOS 14's coolest new toys.

BY JASON CROSS

At the core of making an inclusive, easy-to-use software experience is recognizing that accessibility is not just code for "people with disabilities." It's just a set of tools to match people's capabilities with the use of a product. We are all situationally disabled, and everyone needs different forms of help to interact with digital products.

Apple has made great strides in its accessibility features, and clearly recognizes the importance of making the iPhone or iPad easy for everyone to use, regardless of physical capabilities. But some of the coolest stuff, stuff everyone

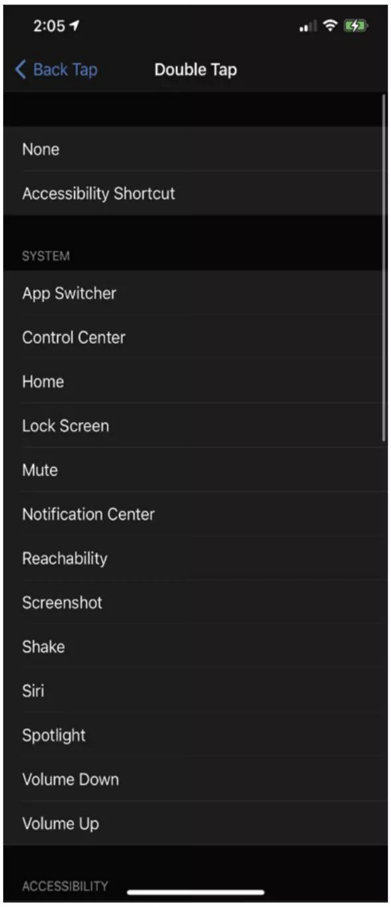
IMAGE: JASON CROSS

can and would want to use, is still frustratingly buried in the Accessibility section of the Settings app.

BACK TAP

Open Settings ➔ Accessibility ➔ Touch and scroll all the way down to find the Back Tap menu.

This lets you add an action to a double-tap on the back of your iPhone, and another action to triple-tap. These include the ability to open Control Center, take a screenshot, return to the Home screen, adjust volume, and more. You can even set them to one of your Shortcuts, making it very flexible.


2:05
Back Tap
Double Tap
None
Accessibility Shortcut
SYSTEM
App Switcher
Control Center
Home
Lock Screen
Mute
Notification Center
Reachability
Screenshot
Shake
Siri
Spotlight
Volume Down
Volume Up
ACCESSIBILITY

Double- or triple-tap on the back of your iPhone to perform a host of functions.

In our testing, it doesn’t very often trigger accidentally, though you may want to start with triple-tap just to make accidental triggers a little less frequent.

This is like having two extra buttons on your iPhone, and getting to customize exactly what they do! To really make the most of this feature, you’ll want to check out everything Shortcuts (go.macworld.com/shrc) can do.

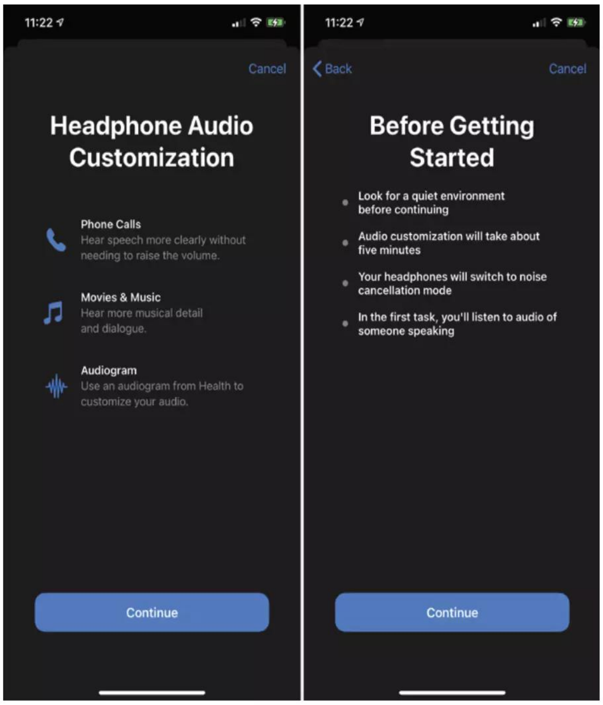
HEADPHONE ACCOMMODATIONS

If you have AirPods or Beats headphones, you’re going to love this one.

Open Settings ➔ Accessibility ➔ Audio/Visual and look for Headphone Accommodations at the top of the screen. Within that menu you can fine-tune the output of your headphones to highlight vocals or make it sound “brighter” as well as adjusting the strengths of the change. The adjusted sound settings can apply only to phone calls if you want, or to all media playback as well.

Most useful is the Custom Audio Setup option, which plays a series of A/B tests to get a feel for the best adjustment for your hearing.

Pretty much everyone starts to lose some of their high-frequency hearing fidelity as they age, and years of loud music can take its toll even on younger listeners. Try it out, and then listen to music with the setting



11:22

Cancel

Headphone Audio Customization

Phone Calls
Hear speech more clearly without needing to raise the volume.

Movies & Music
Hear more musical detail and dialogue.

Audiogram
Use an audiogram from Health to customize your audio.

Continue

11:22

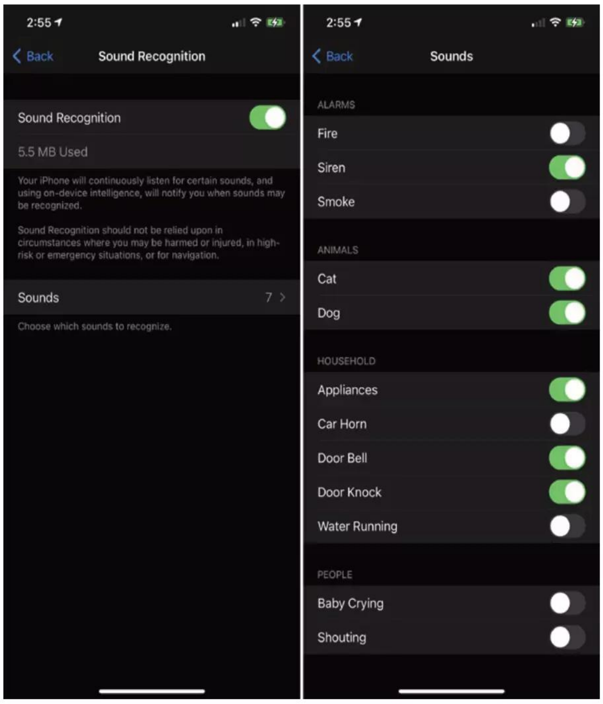
Back Cancel

Before Getting Started

- Look for a quiet environment before continuing
- Audio customization will take about five minutes
- Your headphones will switch to noise cancellation mode
- In the first task, you'll listen to audio of someone speaking

Continue

If you have AirPods or Beats headphones, run through the Custom Audio Setup feature. Trust me.



2:55

Back Sound Recognition

Sound Recognition ●

5.5 MB Used

Your iPhone will continuously listen for certain sounds, and using on-device intelligence, will notify you when sounds may be recognized.

Sound Recognition should not be relied upon in circumstances where you may be harmed or injured, in high-risk or emergency situations, or for navigation.

Sounds 7 >

Choose which sounds to recognize.

2:55

Back Sounds

ALARMS
Fire ○
Siren ●
Smoke ○

ANIMALS
Cat ●
Dog ●

HOUSEHOLD
Appliances ●
Car Horn ○
Door Bell ●
Door Knock ●
Water Running ○

PEOPLE
Baby Crying ○
Shouting ○

With iOS 14, your iPhone can give a visual notification when it hears common sounds. Perfect for those who wear headphones a lot!

enabled and disabled. The difference is striking, without making your music or video sound distorted or heavily modified.

This feature only works for AirPods and Beats headphones, as Apple has a good model of the acoustic properties of those headphones. Some third-party headphones have their own similar tools in separate apps.

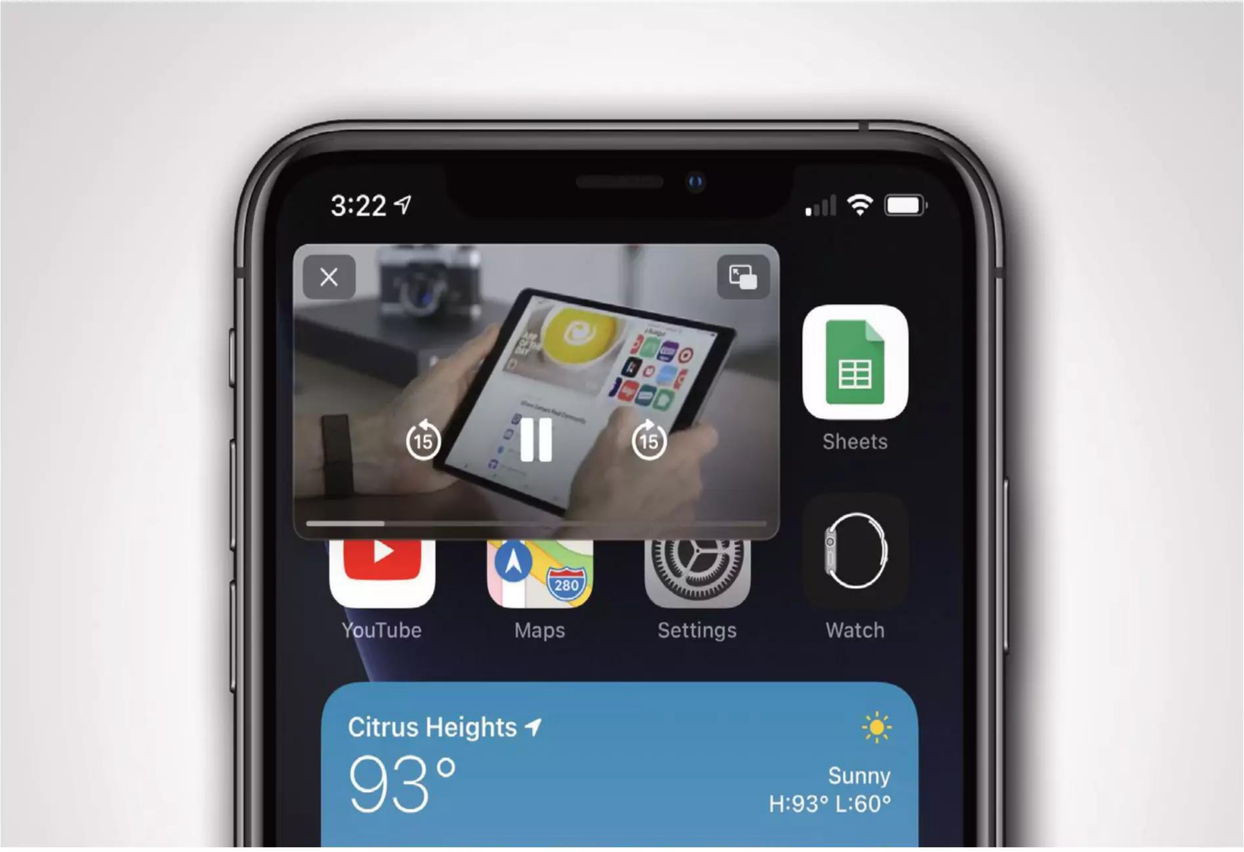
SOUND RECOGNITION

Wouldn't it be cool if your phone could pop up a notification when it hears certain sounds? Like, a smoke alarm, a dog barking, the microwave dinging, or the door bell ringing?

Open Settings → Accessibility → Sound Recognition and you can enable exactly this feature. Then tap the Sounds menu to select which of the 12 sounds you'd like your iPhone to listen for.

It's meant to help deaf users be better aware of sounds they may need to react to in their environment, but anyone who likes to use headphones while they work or chill out at home will probably appreciate it.

All the sound processing happens on-device—Apple is not listening to you. Unfortunately, it's incompatible with "Hey, Siri," so you have to choose between these handy notifications or the ability to trigger Siri hands-free. You can still trigger Siri by long-pressing the side or home button, of course. ■



How to use picture-in-picture on your iPhone in iOS 14

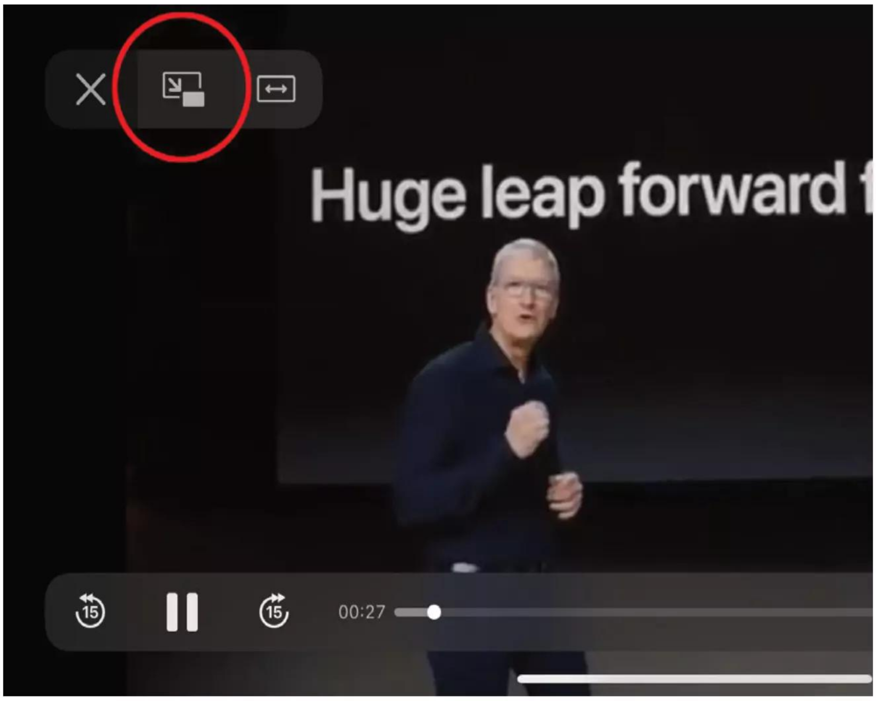
The iPad feature finally comes to iPhone, and it may change the way you watch videos and make FaceTime calls.

BY JASON CROSS

Apple first implemented picture-in-picture on the iPad way back in iOS 9, and users have been clamoring for it to come to the iPhone ever since. With iOS 14 (go.macworld.com/14fa), Apple has finally given us our wish. PIP is now on iPhone, and it works almost exactly like it does on iPad.

Apps need to incorporate support for the feature, though. During the early beta days, the PIP feature worked in the TV app or any video that streamed in Safari, but popular apps like Netflix and YouTube had not yet implemented PIP support. But as of now, Netflix supports PIP but YouTube has yet to add support.

IMAGE: IDG



To enter PIP mode, tap the PIP button in the upper left on a full-screen video.

HOW TO USE PICTURE-IN-PICTURE

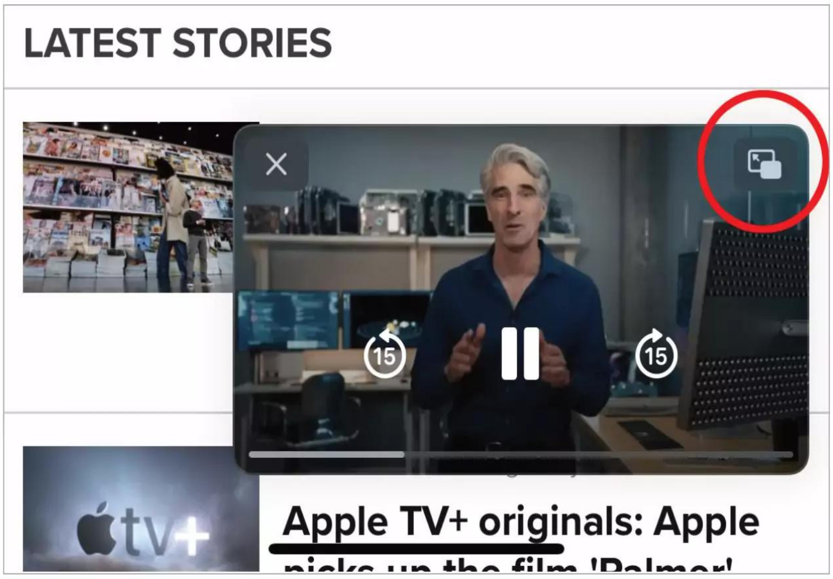
To start watching a video in PIP mode, just tap the PIP icon in the upper left. You'll have to be using an app that supports PIP video like the TV app or Safari. But in Netflix, all you have to do is press your home button or swipe up from the bottom to get to your home screen to enter PIP mode.

The video will shrink down into the corner. Tap it to view simple controls. Double-tap it to change the video size from small to larger.

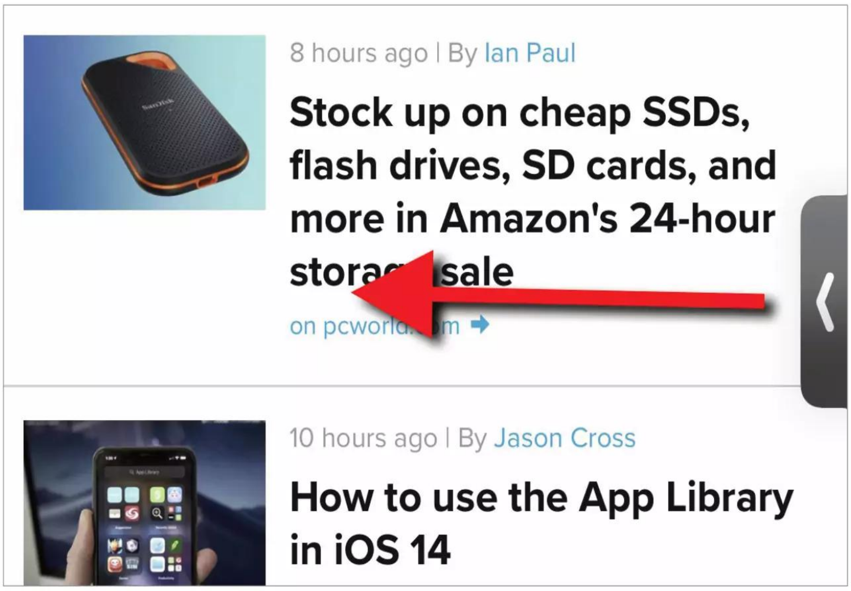
If you want to expand the video back to full screen, tap the PIP mode button in the upper right of the PIP video box (this is true in Netflix as well).

If you want to close the PIP video entirely, tap the close button in the upper left of the PIP video box.

You can drag the PIP video to any corner of your iPhone display. At the larger size, it takes up the entire width (in portrait orientation) and can just move to the top or bottom.



Tap the button in the upper right to switch your PIP video to full-screen mode.



8 hours ago | By Ian Paul

Stock up on cheap SSDs, flash drives, SD cards, and more in Amazon's 24-hour stora[illegible] sale

on pcworld[illegible]m

10 hours ago | By Jason Cross

How to use the App Library in iOS 14

Drag the video off screen to turn it into a little tab, and drag it back to restore it.

If you want to hide the video but keep the audio playing, swipe it off the edge of the screen. You'll see a tab where the video is hidden off screen. Drag the tab up or down to get it out of the way of the app you're using, and swipe it back to restore the video.

HOW TO USE PIP IN A FACETIME CALL

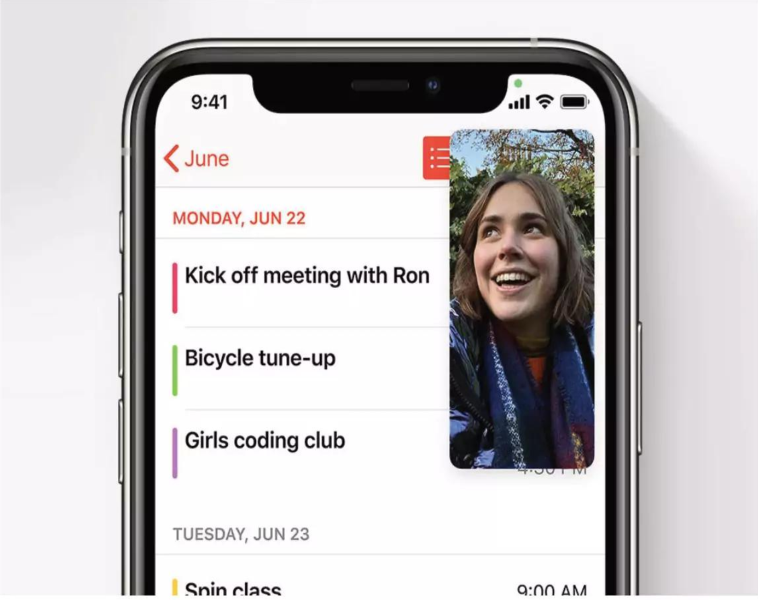
FaceTime in PIP mode is a little different. There's no obvious PIP mode button.

Instead, just leave the FaceTime app—swipe up to return to the home screen, swipe right along the bottom edge to jump to the previous app, or press the home button (if you have one). Doing this in previous versions of iOS would cause your call to continue without you seeing it, but in iOS 14 the call will shrink into a PIP window.

HOW TO WATCH YOUTUBE IN PIP

Until YouTube releases a version of its app that's compatible with PIP, you'll have to use Safari.

Go to the YouTube website in Safari and play a video. Enter full-screen mode. Press the PIP button or swipe up to return to your home screen to enter PIP mode. ■



Just leave your FaceTime call page without hanging up, and it will automatically go into PIP mode.

S
SCIENCE
T
E
ENGINEERING
M

YOU ARE THE GENERATION THAT WILL BE STEPPING FOOT ON MARS.

TIERA FLETCHER
STRUCTURAL ANALYSIS ENGINEER, BOEING

GIRLS IN STEM BECOME WOMEN WHO CHANGE THE WORLD.
LEARN MORE **@SHECANSTEM** ON INSTAGRAM

PHONE

iPHONE 12 MINI: A CONCENTRATION NOT A REDUCTION

BY MICHAEL SIMON

Macworld EDITORS' CHOICE

The iPhone 12 mini will probably be Apple's worst-selling iPhone in years. But that's kind of the point. With a screen that measures just 5.4 inches, it's one of the smallest smartphones ever made and only about a half-inch taller than the original iPhone. It's so small that it's actually easier to use with one hand than two.

Before we get into the nitty-gritty, here's what you need to know.

VZY
3:29
Tuesday, December 8
No Service
3:29
Tuesday, December 8
Press home to unlock

The iPhone 12 mini (left) is actually a bit smaller than the iPhone SE but has a whole lot more screen.

> The iPhone 12 mini isn't quite as small as the original iPhone SE (go.macworld.com/ise1), but it's a little smaller than the current iPhone SE (go.macworld.com/crse). With an all-screen design, however, it feels much larger than either of those phones. There will definitely be an adjustment for anyone who hasn't used an iPhone without a home button, but the screen-to-body improvements will be massive.

> The performance, camera, and charging are all top-notch and the same as you'll get on the iPhone 12 (go.macworld.com/i12r). It's remarkable that a phone of this size can deliver such a tremendous experience in the areas that matter.

> The battery will likely be plenty good for the people who want a phone this size, but it's not as good as the iPhone 12. I routinely needed to charge the mini for a half-hour or so during the day to make sure I made it through, and the old 5W iPhone plug won't cut it. You should invest in a 20W power adapter, wireless charging pad (go.macworld.com/wrpd), or MagSafe charger (see page 58).

> Some apps might be a bit truncated at the top due to the iPhone 12 mini's unique size. The major issues I experienced were resolved with updates, but some icons and elements in some apps are still uncomfortably close to the notch and status bar.

Those quibbles aside, if you've been waiting for an iPhone with a small screen and a modern design that will fit in any pocket or clutch, you'll absolutely love the iPhone 12 mini. It's basically a smaller version of the 6.1-inch iPhone 12, and while there are some quirks that tarnish the experience somewhat, it's easily the best phone you can buy under 6 inches. There may be cheaper options like the 5.8-inch Google Pixel 4a (go.macworld.com/px4a) or Galaxy S10e (go.macworld.com/g10e) or even the 4.7-inch iPhone SE, but if you want the best, the mini is it.

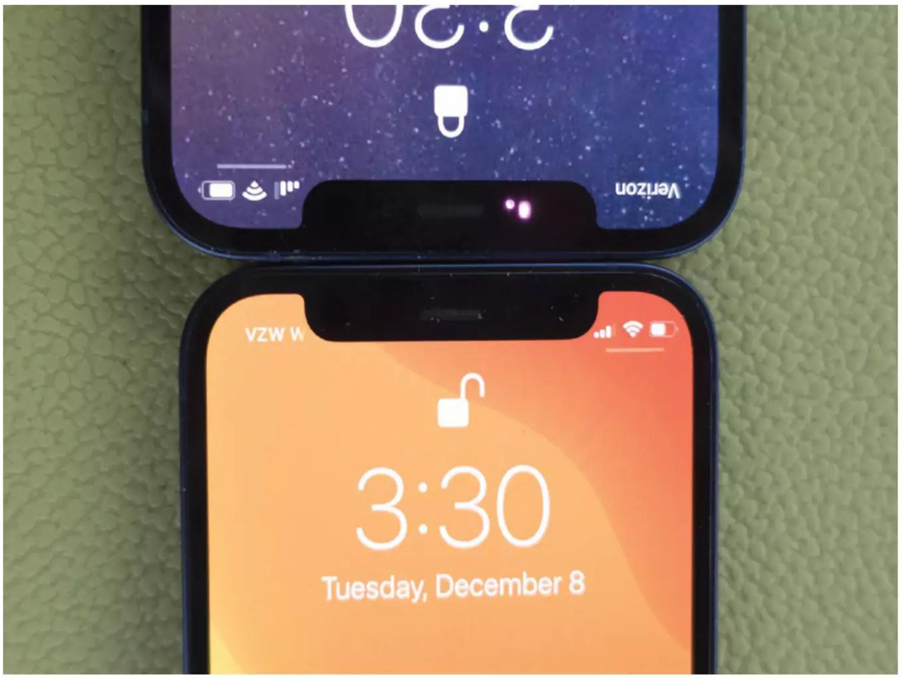
PERFECTLY PETITE

There isn't much to say about the design of the iPhone 12 mini that hasn't already been said about the iPhone 12. The mini has the same shape, flat-edged design, color selection, and camera array as the iPhone 12. It looks great even at this size and feels fantastic to hold, almost like an updated (original) iPhone SE.

The display is the same as the larger iPhone 12 as well, and it's even more impressive at this size. It's so small, Apple probably could have gotten away with the same 720p LCD on this phone as it has on the iPhone 11, but the move to OLED gives the iPhone 12 a premium feel that belies its stature. Colors and text pop off the Super Retina XDR screen, and at 476ppi, it's even denser pixel-wise than the iPhone 12 Pro Max (458ppi).

Because the phone is so small, the bezels and notch look a little chunkier than they do on the iPhone 12. And a couple of the apps I used needed small tweaks to account for the small size. Even after updates, however, status icons are a little closer to the notch than they are on the other models and the bezels are a little more iPhone XR-like, but the design isn't at all distracting. After those criticisms, it may sound a bit like faint praise, but the fact remains: the iPhone 12 mini is far and away the nicest 5-inch phone ever made.

It's also the fastest. The iPhone 12 mini



The notch on the iPhone 12 mini (bottom) is just as big as it is on the iPhone 12, which messes with the layout and the status bar a bit.

has the same A14 bionic processor that's in the higher-end iPhone 12's, and it's every bit as fast as the iPhone 12. Benchmarks are virtually identical to the iPhone 12 and you can feel every bit of the speed on a screen this small. Animations, transitions, app launching, and scrolling is incredibly fast. It's not, but the mini actually feels faster than the iPhone 12 due to its smaller size.

The iPhone 12 mini would probably be $100 cheaper without 5G connectivity, and even though it's a feature most buyers won't need now, it's good to have. All three carriers offer some form of 5G with plans to build it out in the coming year, so you're essentially future-proofing your small phone.

I was able to test the 12 mini using Verizon's mmWave network and it's just as speedy as the larger iPhone 12. Think of it this way: if Apple stops making a phone this small in a couple of years, you can keep your iPhone 12 mini for 4 to 5 years without missing a beat.

BATTERY LIFE IS FINE BUT NOT GREAT

What doesn't feel better, or even the same quite frankly, is the battery. The iPhone 12 mini has a paltry 2,227mAh battery (versus 2,815mAh on the bigger model), and for the first time in a flagship-level iPhone, it shows.

It's not that the iPhone 12 mini has horrendous battery life—I routinely got around 6 hours of screen-on time during my time with it as my daily driver, but I still needed to find a charger more often than not. It didn't take much–a quick 20 minutes usually did the trick—but I was more aware of the 12 mini's battery life than with any other flagship

The iPhone 12 mini has the same gloriously flat edges as the iPhone 12.

iPhone I've used. It's the kind of battery life you can live with in the $399 iPhone SE, but it's a little more noticeable in a $729 phone.

You'll get a great camera no matter which size of iPhone 12 you buy.

The 12 mini's less-than-great battery shines a somewhat harsher spotlight on its bountiful charging options. Like the other models, you get fast, wireless, and MagSafe charging, all of which require a separate purchase. The iPhone 12 mini only comes with a USB-C-to-Lightning cable, so you'll need to get a 20W adapter ($19) along with either a MagSafe charger ($39) or a wireless charging pad.

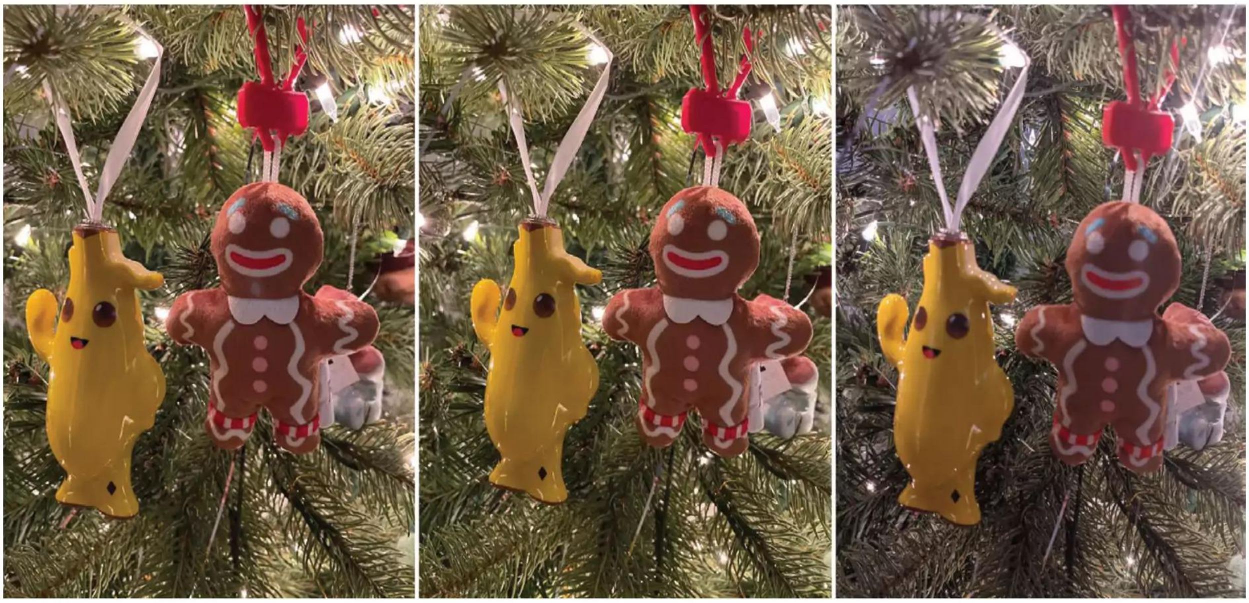
But the battery life shouldn't be a deal-breaker for anyone attracted to the iPhone 12 mini's size. The compromises here are to be expected and relatively small, and won't dampen the experience much at all.

AN IMPRESSIVE PICTURE TAKER

While the biggest selling point is the size of the display, the camera is what makes the iPhone 12 mini truly remarkable. The closest comparison at this price range is the Pixel 5, but when you factor in the speed and features, especially when it comes to video, it's very hard to beat the iPhone 12.

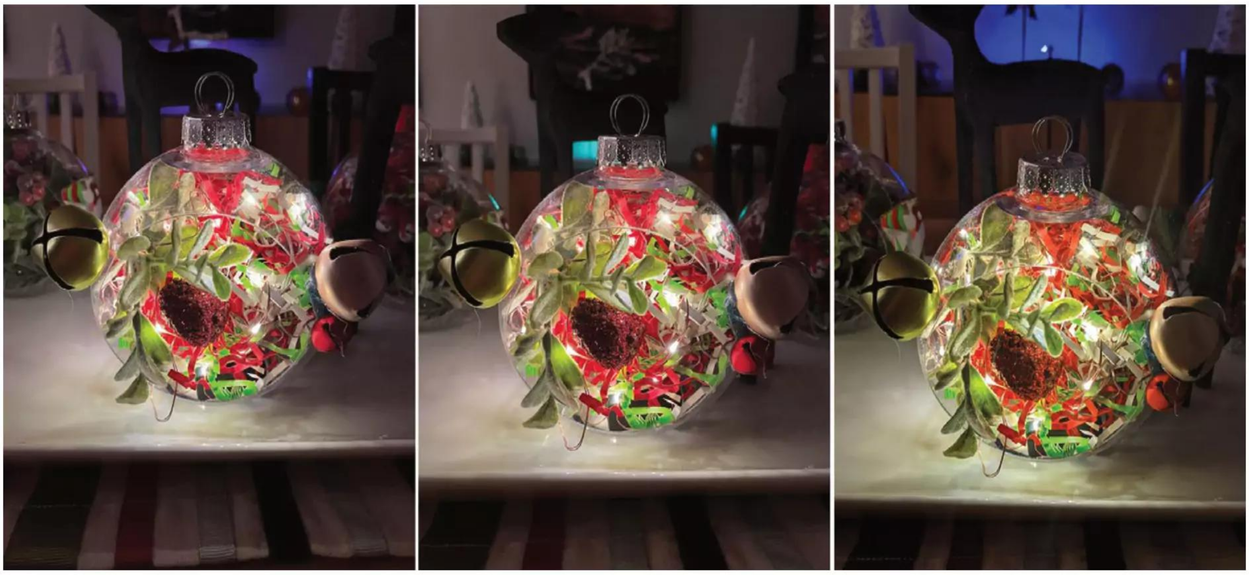
Along with seven-element wide and five-element ultra-wide lenses, you're getting the full complement of features that Apple brought to the iPhone 12 this year, including Night mode, Deep Fusion, Smart HDR 3, Portrait mode, Portrait Lighting, QuickTake video, Night mode Time-lapse, 4K cinematic video stabilization, and HDR video recording with Dolby Vision.

It's a monster feature-set that is backed by the quality of the shots you'll take. The



The shots taken by the iPhone 12 mini (left) and the iPhone 12 (center) are virtually indistinguishable, while the Pixel 5 (right) struggled a bit with the focus.

iPhone 12 mini excels in all kinds of light, and while you can quibble over the benefits of a secondary telephoto lens versus on ultra-wide one, the fact of the matter is you'll be able to whip out your 12 mini and snap a pic quicker than you will with any other phone due to its size. It's hard to quantify with benchmarks or samples, but the iPhone 12 mini delivers the most pleasurable photo-taking



The iPhone 12 mini (left) handled the tricky lighting and color of this shot as well as the iPhone 12 (center) and the Pixel 5 (right).

The original iPhone SE is still a little smaller than the iPhone 12 mini (middle) and iPhone SE (bottom).

experience I've had in a smartphone in a long time.

Otherwise, you'll be hard-pressed to tell the difference between photos snapped with the iPhone 12 mini, iPhone 12, and a stellar Android camera like the Pixel 5. As you can see in the images above and below, the iPhone 12 mini (left) captures impressive detail and handles tricky color with ease, while nailing the white balance and the focus with ease.

And the same goes for night mode, which works on all three cameras, selfies, videos, and anything you want to shoot with your phone. Simply put, you won't find a better camera in a phone this small.

BOTTOM LINE

As I've written numerous times in this review, the iPhone 12 mini is for people who want a small phone that's not underpowered or outdated. If you've been holding onto your original iPhone SE, the mini is a no-brainer purchase.

The same goes for bargain hunters. If you want the cheapest iPhone 12 regardless of screen size, the iPhone 12 mini for $729 (or $699 with carrier "special offers") is it. Just make sure that you'll be okay with a phone of this size. I've used it for about three weeks and have adjusted to the size, though I'm still looking forward to returning to a larger phone. But if you want the smallest possible phone that doesn't compromise, there's nothing small about the mini other than its display. ■

●●●●½

iPhone 12 Pro mini

PROS

- Great design and display.
- Fantastic camera that rivals much bigger phones.
- Excellent feature set for a 5.4-inch phone.

CONS

- Small size is an acquired taste.
- Battery life is so-so.

PRICE

$729

COMPANY

Apple

enter
Swipe up to unlock
33% Charged

CHARGING PAD

APPLE MAGSAFE DUO CHARGER: CHEAPLY MADE, POORLY EXECUTED, AND WAY TOO EXPENSIVE

BY MICHAEL SIMON

The best thing I can say about the MagSafe Duo charger is that it does what it's supported to do: charge your iPhone 12 and Apple Watch at the same time. But if you're looking for a revolutionary MagSafe charging experience—or quite frankly, even a good one—you should probably wait for something better and cheaper to come along.

At $129, you should expect the MagSafe Duo to bring a level of charging akin to the fabled AirPower charger (go.macworld.com/ap0w), which promised a

IMAGE: MICHAEL SIMON

new charging solution that, according to Phil Schiller, would "actually help the entire industry move forward." The MagSafe Duo doesn't do that. If anything, it's a step backwards.

The MagSafe Duo charger is very pocketable and clearly made with travel in mind, but it doesn't feel like it'll hold up to the abuse of tossing it in a bag or a pocket on a regular basis. And even if it does, it's going to get extremely dirty. It has a bit of weight to it, so it'll probably find its way to the bottom of a bag, and since it only comes in white, you're going to see every inevitable scratch and mark it picks up.

Scuffs and scrapes aside, the "hinge" on the Duo is made of what feels like rubber, and I'm not convinced that it won't crack and tear over time. I've only opened it a few dozen times, and already it has a very prominent crease on the inside. For the price, it doesn't look or feel very premium, so I can't image wear and tear will be kind to it.

When closed, you won't be able to charge anything using the MagSafe Duo charger.

The hinge on the MagSafe Duo will crease almost immediately and feels very flimsy.

SIMPLE YET CONFUSING

Despite its versatile appearance, the MagSafe Duo is actually fairly basic. You can open it to charge your iPhone (or any other Qi-enabled device) and Apple

Watch, or flip it around on itself to charge one thing at a time. When closed, you can't charge anything, which feels like a missed opportunity.

The magnets on the MagSafe Duo are quite strong, which is good for keeping your phone in place, but not so good for using it as a stationary desk charger. Like the MagSafe charging puck, you'll need to physically pry the charger from your phone to remove it and the floppy hinge doesn't lend itself to propping the iPhone up like a stand.

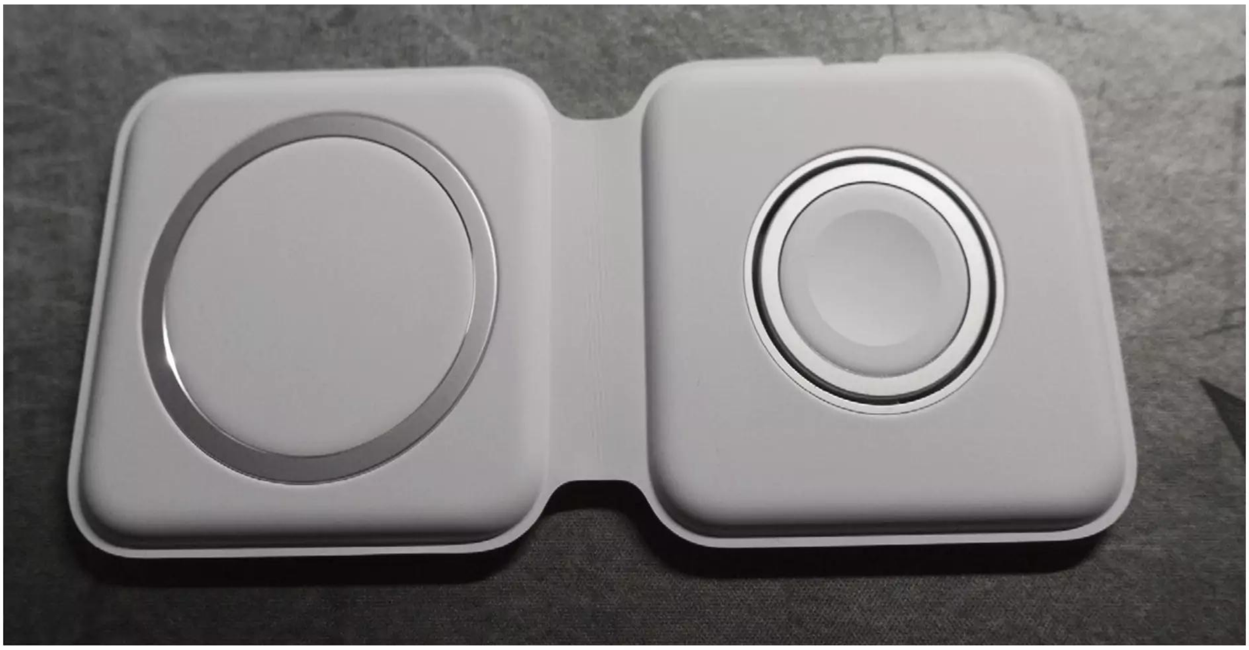
The watch side is a little more versatile in that you can either lay your watch flat, which might be tricky depending on the strap you have, or prop it up. It's slightly easier to remove than the phone side, so it's more conducive to using on a desk or a nightstand. I don't know why Apple didn't give the iPhone side the same ability to function a flip-up charger as well.

Unlike AirPower's promise (go.macworld.com/ap0w), you need to put each device on its specific side to charge, and speeds will vary based on the charger you use. Like the iPhone, the MagSafe Duo charger comes with a Lightning-to-USB-C cable but no power adapter, so you'll need to bring your own. However, if you use the same 20W charger ($19) that Apple recommends for the iPhone 12's charging needs, you'll only get around 11W charging, while a 29W charger ($49) will give you 14W charging. Except if you use Apple's older 29W USB-C charger, which the company says won't work at all. Here's how Apple breaks it all down:

> USB-C connector (USB-A is not supported)

> 9V/2.22A

The MagSafe Duo charger will prop up your Apple Watch but your iPhone needs to lay flat.



You can charge two things at once when the MagSafe Duo charger is opened.

power adapter provides up to 11W of power

> 9V/3A and higher power adapter provides up to 14W of power

> iPhone 12 mini can get up to 12W for faster wireless charging with at least 9V/2.62A

> Higher wattage adapters at or above 9V/3A will also deliver a maximum of up to 14W peak power to iPhone 12

Even if you can get the top speeds, however, it's actually less than the 15W MagSafe charging speeds you'll get with using the regular MagSafe charger. In my testing, I got sustained charging speeds of around 10W on the iPhone 12 mini and 12W on the iPhone 12 no matter which power adapter I used, so the MagSafe Duo charger obviously won't be great for speedy fill-ups.

MagSafe Charger Duo

PROS

- It's the only MagSafe charger so far that charges your phone and watch together.

CONS

- Charging speeds are slow and depend on the power adapter you use.
- It's somewhat flimsy and will get very dirty over time.
- It can't prop up the iPhone while charging.

PRICE

$129

COMPANY

Apple

BOTTOM LINE

The MagSafe Duo charger won't charge as fast as the regular MagSafe charger or a wired connection, is too magnetic to work as a desk charger, doesn't prop up your phone so you can see what's on the screen, is kinda flimsy, and doesn't work unless it's opened. That laundry list of complaints would make a $49 charger a tough sell, but at $129, it's nearly impossible to recommend. ■

iPHONE 12 V ANDROID PH

IT'S TIME TO CONSIDER SWITCHING

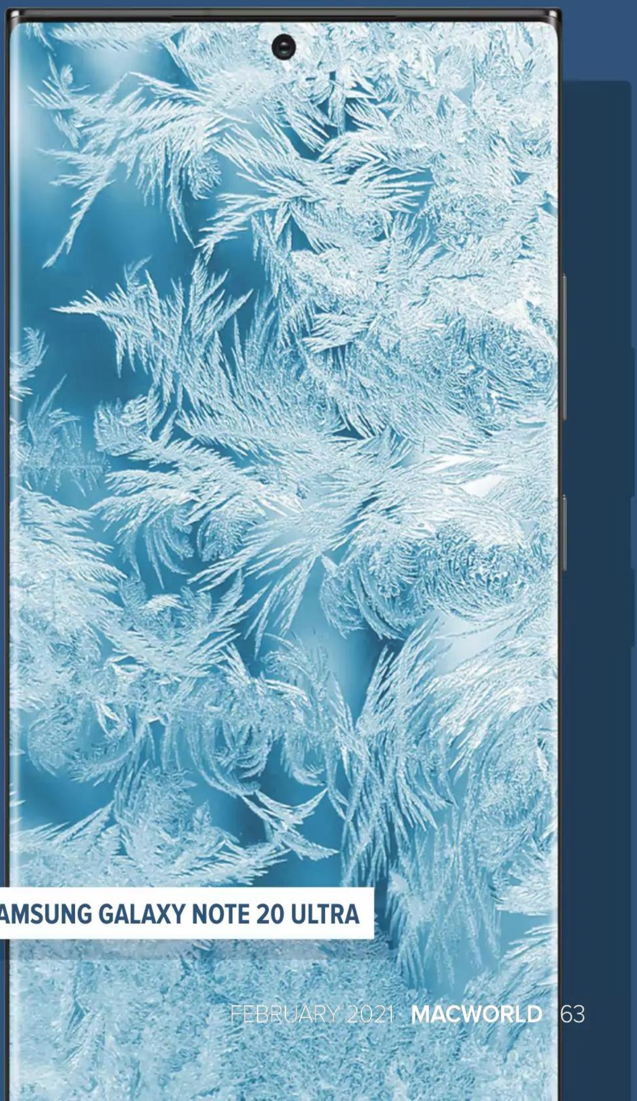
10:00
5G
GOOGLE PIXEL 5
ONEPLUS 8 PRO
APPLE iP

S. THE BEST HONES

APPLE'S TWEAKS, REFINEMENTS, AND ENHANCEMENTS ADD UP TO THE BEST IPHONE AND SMARTPHONE VALUE EVER.

BY MICHAEL SIMON

HONE 12



SAMSUNG GALAXY NOTE 20 ULTRA

SAMSUNG
ONEPLUS
G

Along with the rest of 2020, it's been a wild and unpredictable year for smartphones. Samsung started the year by shipping its most expensive phone ever in the S20 Ultra and finished with one of its best bargains in the Galaxy S20 FE. Google dropped its flagship Pixel 5 to the midrange and delivered its best design ever, while a OnePlus phone topped a grand for the first time. Plus Apple shipped its smallest iPhone since the iPhone 5. And everything came with 5G on board.

But amid all that, which phone emerged from the chaos as the champion of 2020?

PODCAST: **iPHONE 12 VERSUS ANDROID'S BEST OF 2020**

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THE PHONES

Samsung Galaxy Note 20 Ultra: The Galaxy Note 20 Ultra is Samsung's best phone to date even if it has a slightly inferior camera and a smaller battery than the S20 Ultra.

OnePlus 8 Pro: OnePlus went all out on its phones this year, attacking both the high end and the low end with more models than ever before. Even with the 8T arriving months later, the 8 Pro is my pick of the litter, especially at its newly reduced price tag.

Google Pixel 5: Google did an about-face with its smartphones this year, but the Pixel 5 is still among the best Android phones, thanks to Android 11.

iPhone 12: You can make an argument that the $999 iPhone 12 Pro is worth the extra money, but unless you're taking a lot of zoomed shots, the iPhone 12 is the sweet spot.

DESIGN

The phones here might not fold or swivel, but that doesn't mean they don't each have their own unique identities. Their respective wheels most certainly haven't been reinvented, but each phone has enough little touches to both separate it from the others and raise it above the rest of the pack.

First, let's look at the size and screen proportions.

DIMENSIONS

Note 20 Ultra: 164.8 x 77.2 x 8.1mm

OnePlus 8 Pro: 165.3 x 74.3 x 8.5mm

iPhone 12: 146.7 x 71.5 x 7.4mm

Pixel 5: 144.7 x 70.4 x 8.0mm

SCREEN TO BODY RATIO

Note 20 Ultra: 91.63%

OnePlus 8 Pro: 90.79%

iPhone 12: 87.45%

Pixel 5: 86.75%

The Note 20 Ultra is unmistakably Samsung, with a giant curved Infinity Display, hole-punch selfie cam, and very skinny bezels above and below the screen. Like previous Notes, it has a very squared-off aesthetic that makes it seem much taller than it is, while the camera bump in the left corner is quite a bit larger and way more bulbous than the other phones here.

The best color is the new matte Mystic Bronze that's a cross between gold and

The iPhone 12, far left, has a gorgeous design.

rose gold. But you'll probably want to put it in a case. For one, it's made entirely of glass, and for another, its size makes it tricky to hold even with two hands. The squared corners, flat bottom, and camera bump look good, but they combine to create a very awkward and clumsy grip. It's also extremely heavy compared to the other phones here.

The Note 20 Ultra looks pretty in Mystic Bronze.

WEIGHT

Note 20 Ultra: 208g
OnePlus 8 Pro: 199g
iPhone 12: 164g
Pixel 5: 151g

The Pixel 5 isn't just the lightest in this group, it's also one of the nicest. Google did a great job with its latest Pixel phone, delivering the first design that doesn't have enormous bezels. In fact, it's the only Android phone I'm aware of that has universal bezels all around, giving the Pixel 5 a balanced, symmetrical aesthetic similar to the iPhone 12.

Otherwise, it's very much a Pixel. The silhouette is the same as it's been since the original model, and the square camera array is very much cribbed from the Pixel 4. With very little bezel, the selfie

The Google Pixel 5 has another offbeat color: Sorta Sage.

cam is in the left-hand corner of the screen and mostly tucked out of sight.

The OnePlus 8 Pro Ultramarine Blue color is a beauty in its own right.

The Pixel 5 is the only phone here that isn't made of glass, but it's not quite aluminum either. The back is covered in a plastic bio-resin that gives the phone a strange texture and a less-than-premium feel. The Sorta Sage color is nice, though, and the chrome-wrapped power bottom is a nice touch.

The OnePlus 8 Pro is probably the least recognizable of the group, but that's not to say it's a plain or boring phone. It has a fantastic curved display and is the only phone in this bunch that doesn't have a distractingly large camera array. The corners of the display perfectly match the phone's shape, and the bezels above and below the screen are extremely skinny, giving it a near edge-to-edge aesthetic that feels great to hold.

The back is made of glass, but it's frosted so it doesn't pick up fingerprints as easily as the Note 20 and iPhone 12. The two new colors, Glacial Green (8GB RAM) and Ultramarine Blue (12GB RAM), wrap around the sides of the display and look fantastic.

At first glance, the iPhone 12 looks a lot like the iPhone 11 it replaces, but the subtle changes Apple has made are meaningful. The most obvious is the bezel size. On the iPhone 11, bezels were quite large at 5.57mm all around, but on the iPhone 12, they're just 3.47mm. The iPhone 12 is also thinner and lighter than the iPhone 11, and since Apple has returned to a "flat" design for the sides and the screen, the phone has an aesthetic that looks and feels even smaller than it is.

It's also a lot lighter than the other all-glass phones here. Granted, it has a smaller screen than the Note 20 and OnePlus 8 Pro, but the difference in both weight and distribution is palpable when you're holding it. By contrast, the Note 20 is very top-heavy and the Pixel 5 is significantly lighter, feeling less like a premium phone and more like a plastic budget one. The iPhone 12 strikes a nice balance between balance and build quality.

The rather large notch remains, as does the attention-grabbing camera array, but the iPhone 12's overall design is the nicest Apple has produced in years. It's solid, symmetrical, and stylish, and it easily stands out in a crowded field of rounded rectangles. As phones become homogeneous with giant screens and cameras, Apple continues to find a way to lead, with smart iterations and character.

OUR PICK: iPhone 12

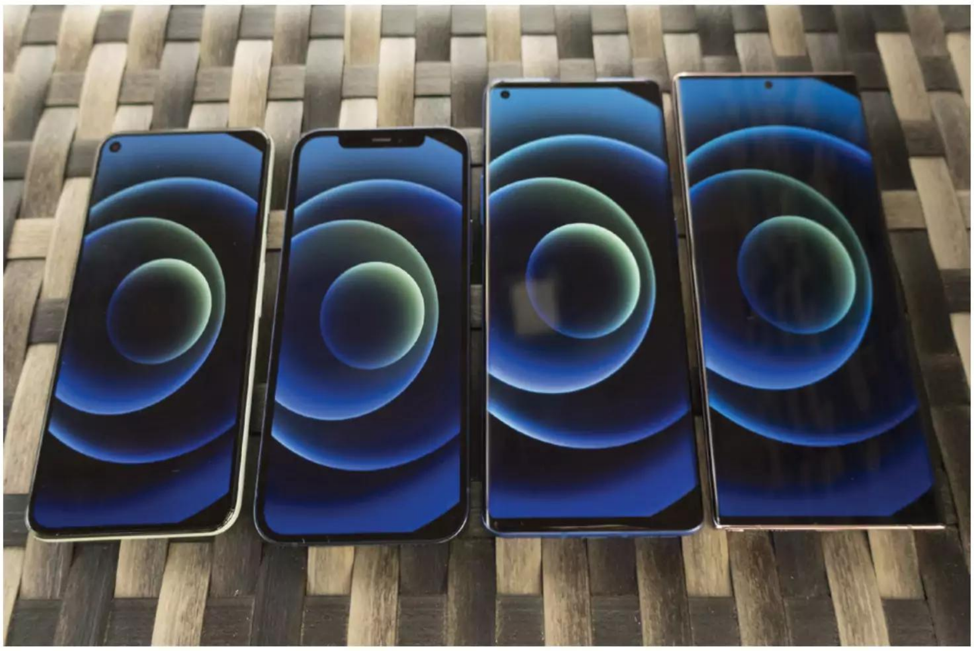
DISPLAY

Premium smartphone displays have reached the point where they basically all get A+ ratings from DisplayMate, so no matter which phone you get, you're getting one of the best displays ever made.

Before we get into size, brightness, and pixel density, the main difference between the Android phones and the iPhone 12 is display speed. While the iPhone 12 is stuck at 60Hz, the Pixel 5 operates at 90Hz, and the Note 20 Ultra and 8 Pro have 120Hz refresh rates. Higher refresh rates mean scrolling should be faster and gaming and videos smoother on those phones, especially when you switch between 60Hz and 120Hz on the Note 20 Ultra and OnePlus 8T. But Apple does such a tremendous job with its display calibration and OS optimization that the iPhone 12 doesn't feel noticeably slower than the 120Hz phones.

The same goes for the resolution. The iPhone 12 and the Pixel 5 both have Full HD+ 1080p displays while the Note 20 Ultra and OnePlus 8 Pro have Quad HD+ 1440p displays. (One caveat, however: you need to lower the Note 20 Ultra's resolution to 1080p to use the 120Hz refresh rate.) The difference is negligible. While the Pixel 5 has separate issues with

You don't even need to snap a pic to see that the Note 20 Ultra's camera array is more powerful than the iPhone 12's.



The phones here have different sized screens but all of them are stunning.

While all of the phones here fall into the "large" category, there's nearly an inch between the smallest and the largest. That might not seem like much on paper, but it makes a huge difference when using them.

color saturation and brightness, both displays are as crisp and pixel-dense as the QHD displays, and the iPhone 12 is every bit as rich and vibrant. If I didn't see the spec sheet, I'd never know the iPhone 12 has fewer pixels.

Apple might not have changed the resolution for its "Super Retina XDR display," but it did add a small change that elevates it even further above the other phones here. Apple calls it Ceramic Shield and it's designed to keep your phone's screen from cracking when dropped from a high distance. I thankfully didn't have a chance to test that, but after a month of use without a screen protector, I couldn't see any micro scratches on my phone's screen like on other phones, including the most recent iPhones.

SCREEN SIZE

Pixel 5: 6-inch
iPhone 12: 6.1-inch
OnePlus 8 Pro: 6.78-inch
Note 20 Ultra: 6.9-inch

The Galaxy Note 20 Ultra isn't just the biggest among the phones here, it's one of the nicest displays I've ever used. Colors are vibrant without being too saturated, photos are rich and bright (with a peak that touched 1,600 nits), and videos are dynamic and smooth. It's hard to find a complaint, except perhaps it's a bit too big.

That said, the OnePlus 8 Pro isn't all that smaller than the Note 20 and it, too, is visually stunning. Like the Note 20, the sides are curved, and its Quad HD+ 3168 x 1440 is bright and vivid. It's bright and

The Galaxy Note 20 Ultra (left) has a stunning 120Hz display.

crisp, but I found the white balance to be a bit off at times, and I noticed a slight purple tint when compared to the other displays.

And as I said above, the iPhone 12's display is remarkable as well. But for speed, clarity, brightness, and depth, the Galaxy Note 20 Ultra stands alone. Even with 1080p resolution, Apple is very close to the Note 20 Ultra, and if the iPhone 13 gains a 120Hz ProMotion display as rumored, it will more than likely catch up.

OUR PICK: Galaxy Note 20 Ultra

PERFORMANCE

The phones in this annual contest always represent the top of the line when it comes to processors and specs, and as such you'll find the Snapdragon 865+ in the Note 29 Ultra, the 865 in the OnePlus 8 Pro, and the A14 Bionic in the iPhone 12.

But you'll find a considerably slower chip on the Pixel 5. To keep costs down, Google has opted for the slower 765G processor, which is plenty capable but in an entirely different league. It's not a bad chip, but it's more akin to the Snapdragon 835 in the Pixel 2 than any of Qualcomm's newer phone chips.

So benchmarks are going to be a little skewed. They don't tell the whole story, as Google's Android optimizations help a lot, but the message is pretty clear: If you want the fastest phone in 2020, the Pixel 5 isn't it. It's the iPhone 12.

GEEKBENCH 5 CPU SINGLE-CORE/MULTI-CORE

iPhone 12: 1599/4107

Note 20 Ultra: 973/3252

OnePlus 8 Pro: 868/3165

Pixel 5: 601/1599

GEEKBENCH 5 COMPUTE

iPhone 12: 9439

Note 20 Ultra: 3564

OnePlus 8 Pro: 3221

Pixel 5: 1010

BROWSERBENCH SPEEDOMETER 2.0

iPhone 12: 192
Note 20 Ultra: 46.2
OnePlus 8 Pro: 72.3
Pixel 5: 26.9

You can argue all you want about the veracity of Geekbench's results on iOS versus Android, but the fact of the matter is the iPhone 12 is head-spinningly fast. Apps fly open, scrolling is incredibly smooth even without a 120Hz display, and the system never feels sluggish in the slightest. And while I'm not sure what's going on with the Note 20 Ultra in BrowserBench's Speedometer 2.0 test, it doesn't really matter when compared to the iPhone 12, which is nearly three times faster than the OnePlus 8 Pro.

And somehow, the gulf is even more apparent with 3DMark's new cross-platform Wild Life graphics benchmark.

3DMARK WILD LIFE UNLIMITED

iPhone 12: 8659
Note 20 Ultra: 4177
OnePlus 8 Pro: 3855
Pixel 5: 1025

The Pixel 5 might be able to get away with a lackluster chip for common tasks, but it shows its inferiority when it comes to its GPU. Once again, the iPhone is the clear winner here, with more than double the score of its closest competitor, and the real-world results bear that out. Where I experienced occasional stutter and lag with all of the other phones here, the iPhone never dropped a frame or fumbled a transition. Case in point: Wild Life measures the average frame rate on the iPhone 12 at 51fps, where the Galaxy Note 20 Ultra only reached 25fps.

The iPhone 12 improves on boot time as well. While you're not going to need to restart any of these phones very often, you'll be able

The iPhone 12 (left) and OnePlus 8 Pro both look beautiful in blue.

All shapes and sizes are represented with the phones here.

to start using it in no time at all. Last year, Apple brought up the rear with the iPhone 11 with a lengthy 21 seconds, the iPhone 12 nearly cuts that time in half:

BOOT SPEED

iPhone 12: 11 seconds
Pixel 5: 11 seconds
Note 20 Ultra: 13 seconds
OnePlus 8 Pro: 14 seconds

As far as 5G goes, all four phones feature sub-6GHz 5G modems on all three major networks, so if you're in a nationwide coverage area, you're good. If you happen to also live near one of Verizon's super-speedy millimeter-wave hubs, you'll be able to access it on the iPhone 12, Note 20 Ultra, and Pixel 4, which all have the required n260 and n261 bands to tap into the ultra-wideband spectrum, but not the OnePlus 8 Pro. The speeds are spectacular, but it's not all that necessary now, when sub-6GHz 5G has only just begun to take off.

OUR PICK: iPhone 12

BATTERY AND CHARGING

The four phones all deliver when it comes to battery life, even with vastly different capacities. Apple uses a laughably smaller capacity compared to the others here but still manages to deliver all-day battery life and then some.

BATTERY CAPACITY

Note 20 Ultra: 4,500mAh
OnePlus 8 Pro: 4,510mAh
Pixel 5: 4080mAh
iPhone 12: 2,815mAh

I can't remember the last time I used an Android phone with a battery under 3,000mAh, and there's a reason for that. If any of the ones here had a battery that small, they would almost certainly struggle to make it through half a day. But the

The colors and finishes on these phones are among the best I've ever seen.

iPhone 12 rarely finished a day with less than 20 percent remaining and somehow manages to eke more out its 2815mAh battery than Samsung or OnePlus with 4500mAh ones.

Here's how much battery was drained after playing a 1-hour-and-49-minute 4K HDR movie (*Birds of Prey*) on each phone at full brightness and auto-brightness.

BATTERY LOSS; FULL BRIGHTNESS

iPhone 12: 13%
OnePlus 8 Pro: 13%
Pixel 5: 18%
Note 20 Ultra: 19%

BATTERY LOSS; AUTO-BRIGHTNESS

iPhone 12: 11%
OnePlus 8 Pro: 13%
Note 20 Ultra: 14%
Pixel 5: 16%

It's quite remarkable. Even with such a small battery, the iPhone 12 sips power while the others drink it. All four phones are basically guaranteed to get you through the day, but the iPhone 12 and OnePlus 8 Pro are as close as you're going to get to completely worry-free. No matter what you're doing, neither phone will make you reach for a charge at any point throughout your day and should comfortably make it the end of it. But none of the phones here will need much in the way of charging.

Speaking of charging, all four phones feature fast charging, but they're quite different. For starters, the iPhone 12 doesn't include a power adapter in the

You'll get USB-C on all of the phones here except the iPhone 12 (bottom), which of course has a Lightning port.

box, so you need to bring your own 20W or higher plug. The other phones all include everything you need to get peak charging out of the box.

FAST CHARGING RATE

iPhone 12: 20W
OnePlus 8 Pro: 30W
Note 20 Ultra: 25W
Pixel 5: 18W

All of the phones will fill up fast enough, but the OnePlus 8 Pro fills up the fastest without needing any extra equipment. But if you need a fast charge in less than a half-hour, any phone will fit the bill.

You'll also get wireless charging with each of the phones and again, it varies quite a bit even when using the same standard charging pad.

WIRELESS CHARGING RATE

OnePlus 8 Pro: 15W
Pixel 5: 12W
Note 20 Ultra: 10W
iPhone 12: 7.5W

You'll obviously need to bring your own charger, but the right one can actually increase your speed. OnePlus sells a Warp Charge 30W wireless charging stand that's a little bulky and has a built-in fan for cooling, while Apple has a magnetic MagSafe charger that ups the speeds to 15W. MagSafe has the potential to be a game-changing feature and if you're on the fence, could be the thing that pushes you over. There's nothing like it on any Android phone and could lead to some pretty cool accessories beyond just chargers and stands.

OUR PICK: iPhone 12

OS AND SECURITY

I'm not about to launch into a treatise on the benefits of iOS over Android, but I'll say this: the changes in iOS 14, particularly the App Library (go.macworld.com/alib) and home screen widgets (go.macworld.com/wdgt), bring the iPhone's customization that much closer to what you can do with Android. Apple even lets you set default browser and mail apps (go.macworld.com/dfbr) now.

On the flip side, Android is still a bit hit or miss. While the Pixel 5 obviously ships with Android 11 out of the box and the OnePlus 8 Pro quickly received its Android 11 update, the Galaxy Note 20 Ultra is still waiting for One UI 3.0 to make it out of beta testing. Samsung hasn't indicated when a stable release will roll out to the U.S., but it likely won't arrive until early 2021.

The good news is the Note 20 Ultra is finally guaranteed to get updates beyond the most recent one. While Samsung's premium phones have generally been good for two release updates and possibly a third, Samsung now assures buyers that they'll be getting updates to their phone for years to come.

OS UPDATE CYCLE

Note 20 Ultra: 3 generations
Pixel 5: 3 years
OnePlus 8 Pro: 2 years
iPhone 12: Not specified

The difference between generations and years is significant. While the Note 20 Ultra released in late August, it's only guaranteed to get Android 11, 12, and 13, even if Android 14 lands before the third year is up. Google, on the other hand, promises three years of updates, giving it a little wiggle room on phones that release on the bubble, like the 4a. At any rate, you'll definitely get Android 14 on your Pixel 5. OnePlus continues to be extremely disappointing with updates, with its recent Nord N10 phone not guaranteed (go.macworld.com/nr10) to get an update past

Search
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Gmail
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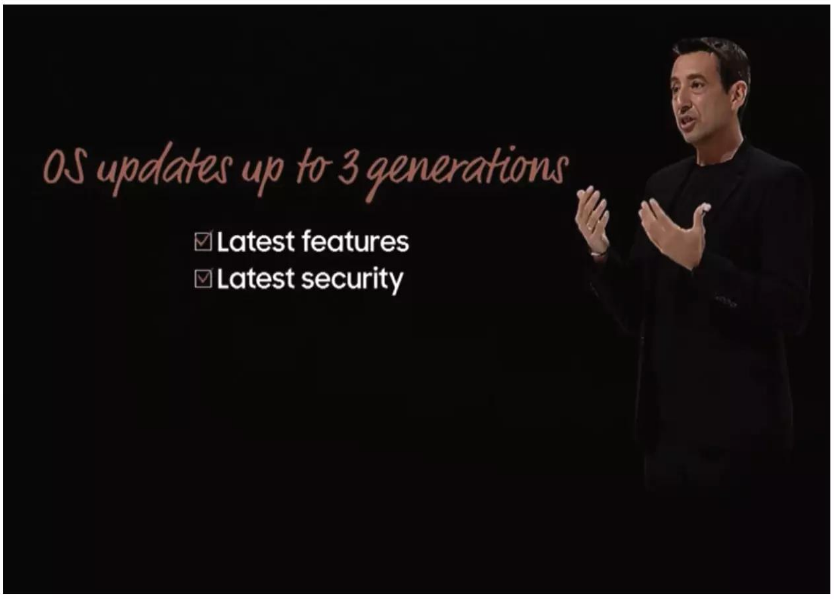
Phone
Play Music
Play Store
Samsung Pay
Settings
YouTube
Candy Crush Saga
Samsung Members v1
3DMark
PCMark
Geekbench 4
1Password
23andMe
AccuWeather
Action Blocks
AIDA64
App Library
Suggestions
Recently Added
Productivity & Finance
Social
Utilities
Games

The App Library in iOS 14 (right) is very close to Android's app drawer.



Samsung's new update guarantee is kind of a big deal.

Android 11.

The iPhone 12 might stick out, but Apple's non-guarantee is a feature, not a bug. The iOS 14 release that just landed in September supports all iPhones going back to the 6s, which launched in 2015. Even if Apple drops support with iOS 15 as rumored, that's five versions and six years of updates, which blows away anything you'll get from Android.

And even if you do get three full Android versions with the Note 20 Ultra, it's likely going to be missing some features. Along with Assistant and camera features, Google has started to limit access to Android features to non-Pixel phones, including app suggestions, smarter text selection, and extreme battery saver in Android 11. They'll arrive eventually, but with the state of updates, who knows if you'll ever get them on your OnePlus or Galaxy phone.

Plus, Google's Android optimizations make the Pixel experience better than any other phone here. The Pixel 5 isn't quite on the level of the iPhone 12, especially with a far slower processor, but like Apple, Google is doing more with less on the Pixel 5. Even with a slower processor, the UI feels snappy and responsive in a way no other Android phone does.

It's not that the OnePlus 8 Pro and Galaxy Note 20 Ultra feel slow by any stretch, but there's something about the Pixel experience that feels natural. It's difficult to put into words and impossible to demonstrate, but there's a certain *simpatico* between the hardware and the software that make the whole thing feel pleasurable.

After this year's moves, I'm not sure where Google's going with the Pixel, but if it sticks with a midrange processor, it's going to be harder to justify phones that cost well over a thousand bucks when the Pixel performs so smoothly at a fraction of the price.

When it comes to security, the iPhone

The Pixel 5 (left) uses an old-school fingerprint sensor.

12 still stands alone with Face ID, its super-secure 3D face-recognition biometric tech. Google tried something similar with its Soli camera on the Pixel 4, but it's gone here (likely due to cost and lack of widespread support) in favor of an old-fashioned rear-mounted fingerprint sensor.

The Note 20 and OnePlus 8 Pro both have in-display fingerprint sensors, and while they've certainly improved with each release, they're finicky and frustrating. Unlocking routinely takes several attempts, and even when it works, the method is very deliberate. With the iPhone 12, the system is much faster, more secure, and more reliable, and I even preferred the Pixel 5's old-school fingerprint sensor to the newfangled ultrasonic and optical ones. **OUR PICKS:** iPhone 12 and Pixel 5

CAMERA

While each phone here has multiple cameras, the hardware is quite different. The Note 20 Ultra offers a 50X "Space Zoom" lens while the OnePlus 8 Pro has a dedicated color filter camera. The Pixel 5 has an ultrawide lens for the first time and the iPhone 12 offers night mode on both the wide and ultrawide cameras as well as

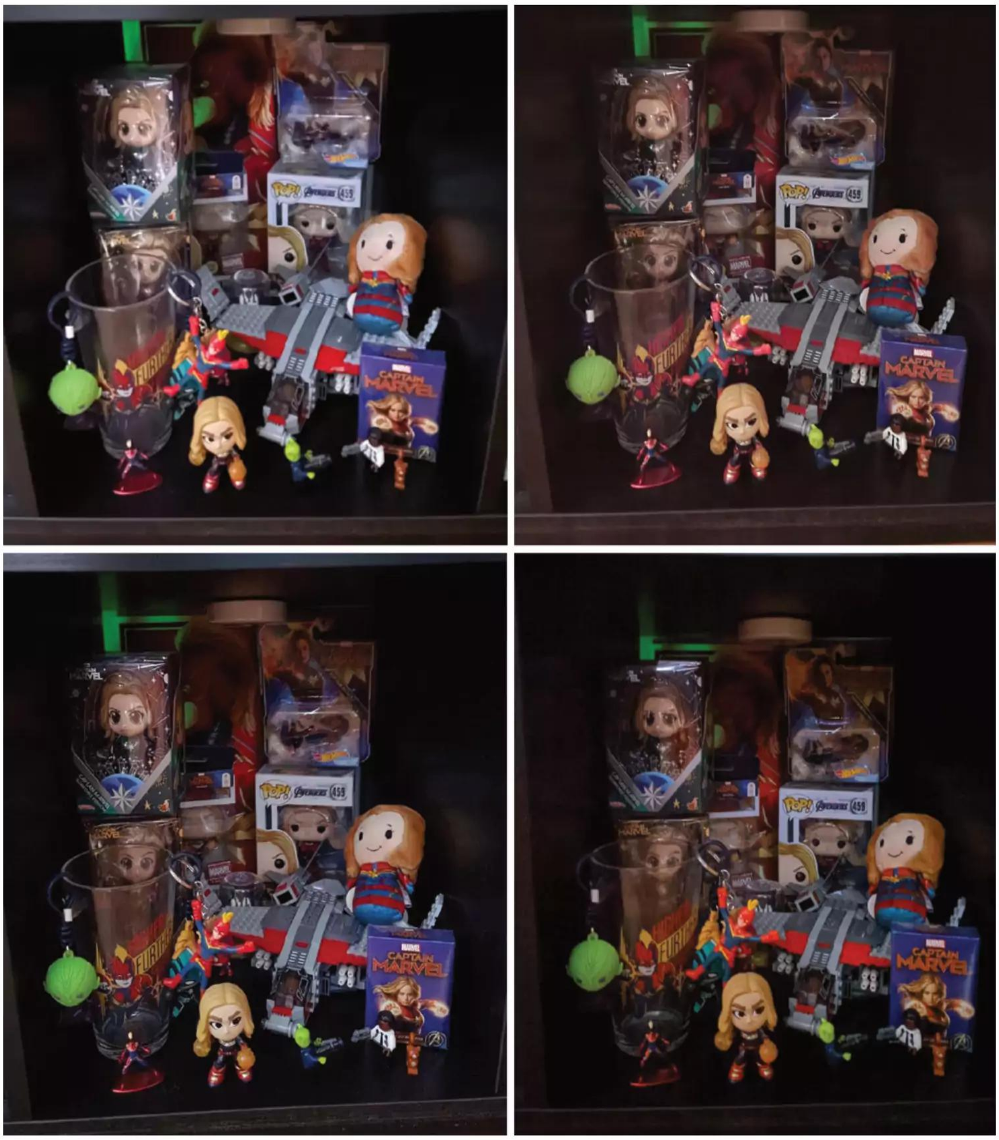
The cameras, clockwise from top left, on the Pixel 5, iPhone 12, Galaxy Note 20 Ultra, and OnePlus 8 Pro are all fantastic.

the selfie cam.

But no matter which phone you choose, you're getting an excellent camera. There are surely subtle differences between them, but smartphones in 2020 have reached staggering heights when it comes to photography, to the point where we have the luxury of nitpicking.

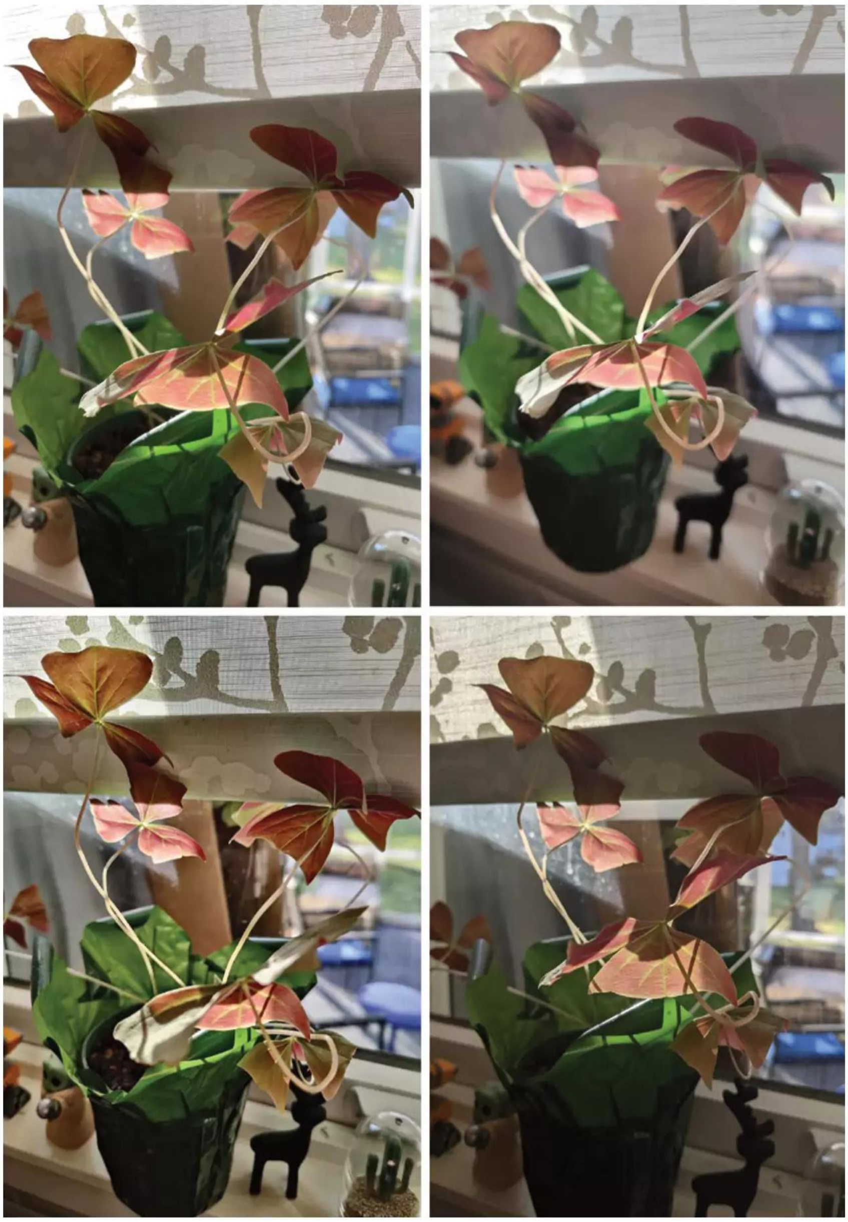
Take nighttime or low-light shots. Just two years ago, it was a detriment for most of these phones, but ever since Google introduced Night Sight on the Pixel 3, everyone has scrambled to catch up. And they have. In the image at right, which was taken in a room where I could barely see what I was shooting, all of the phones capture color, detail, and clarity that the eye simply cannot see.

In the photo at bottom right, the Pixel 5, captures an incredible level of clarity to the point where you can easily read all of the words, even the ones way in the back. The OnePlus 8 Pro (bottom left) also does a fantastic job with conveying


In this extremely low-light shot, all of the phones produced impressive color and clarity, with the Pixel 5 (bottom right) and OnePlus 8 Pro (bottom left), besting the Galaxy Note 20 Ultra (top right) and iPhone 12 (top left).

detail, though the exposure is a bit amped up. The Note 20 Ultra (top right) also nails the color and detail, while the iPhone 12 (top left), which is still very good, isn't as sharp as the others.

In better lighting, all four phones do an admirable job capturing a scene, as you can see at right. The color, contrast, and depth on this busy scene are all preserved incredibly well, with only the OnePlus 8 Pro (bottom left) going a bit too hard on the saturation in the leaves. The iPhone 12 (top left) gets really nice detail on the leaves while the Note 20 (top right) leans too heavily into focusing on the front leaf. Once again, the Pixel 5 (bottom right) gets it all right.

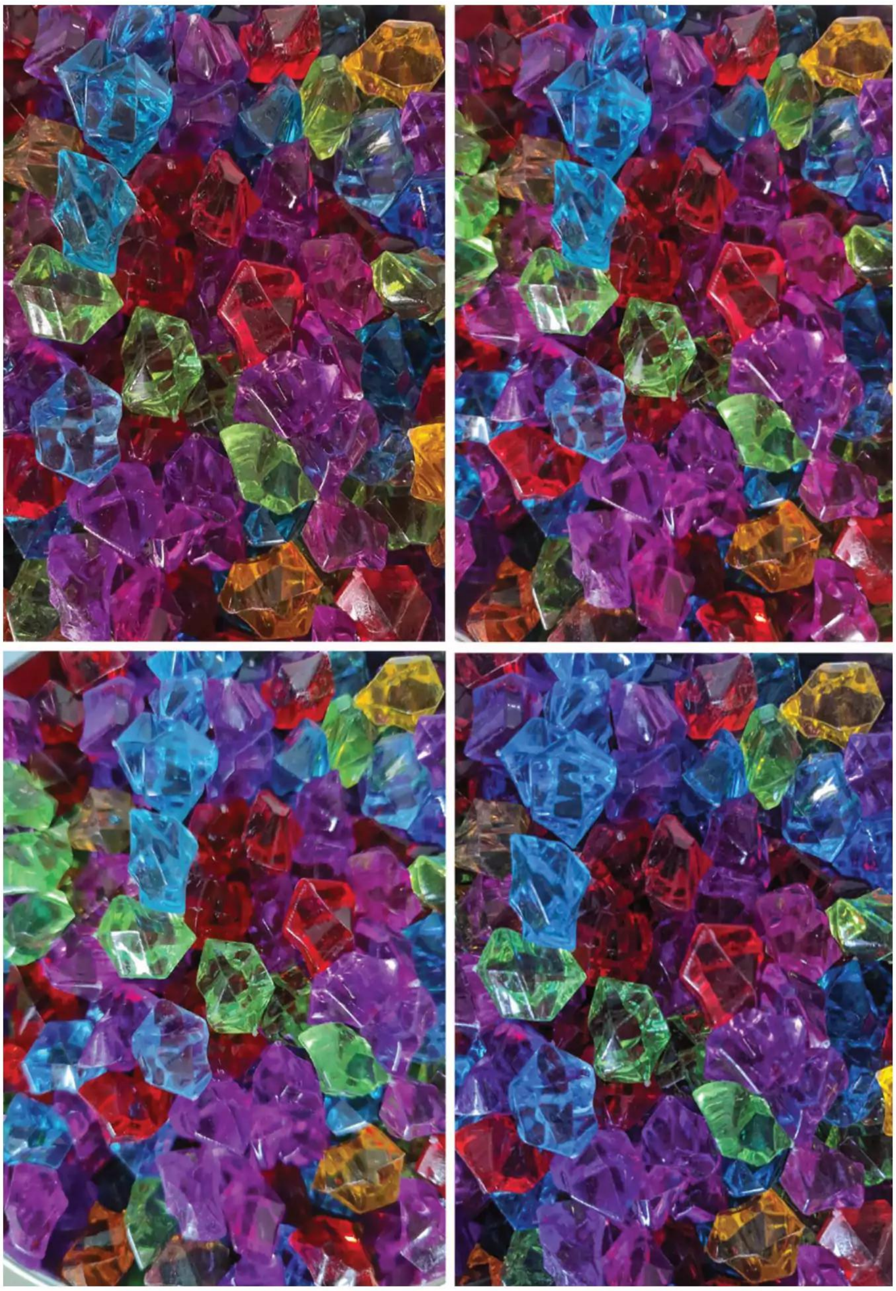

The iPhone 12 (top left) captures the color and detail in this scene better than the Galaxy Note 20 Ultra (top right), OnePlus 8 Pro (bottom left), and Pixel 5 (bottom right).

It's the same story with color. Each of the phones here does a tremendous job of parsing different and diffused colors above, but you can see a little softness in the OnePlus 8 Pro (bottom left) and Galaxy Note 20 Ultra (top right). The iPhone 12 (top left) and Pixel 5 (bottom right) get the color and the clarity nearly perfect, but Google once again gets a slight edge.

There's a bit more separation when it

comes to zooming. The Note 20 Ultra has 5X optical zoom versus 3X on the OnePlus 8 Pro and pure digital zoom on the iPhone 12 and Pixel 5. So the Note 20 is clearly ahead of the other phones here when zooming, whether at 5X or 30X. It's an area where the iPhone 12 (top left) shows its inferiority and where even Google's incredible processing on the Pixel 5 (bottom right) can't compensate. The OnePlus 8 Pro surprisingly struggles as badly as the non-telephoto phones, which shows how hard it is to zoom with a fixed smartphone lens. But if you're going to be taking a lot of shots from further away, the Note 20 is definitely the one to buy.

When it comes to video, all four phones offer impressive video stabilization as well as 4K at 60fps. The Note 20 Ultra can shoot in 8K at 24fps as well and the iPhone 12 records in 10-bit Dolby Vision HDR 4K at 30fps. On the front, the selfie cams are all fairly equal, even with different hardware.



While the OnePlus 8 Pro (bottom left) and Galaxy Note 20 (top right) struggled a bit with clarity in this colorful shot, the iPhone 12 (top left) and Pixel 5 (bottom right) nailed it.

FRONT CAMERA

Pixel 5: 8MP
iPhone 12: 12MP
OnePlus 8 Pro:16MP
Note 20 Ultra: 40MP

But you're not going to want to make a decision based on the front camera. And when it comes to the rear camera, any phone will deliver the goods, but there's one that's just a little ahead of the pack, despite its lack of a zoom lens.

OUR PICK: Pixel 5

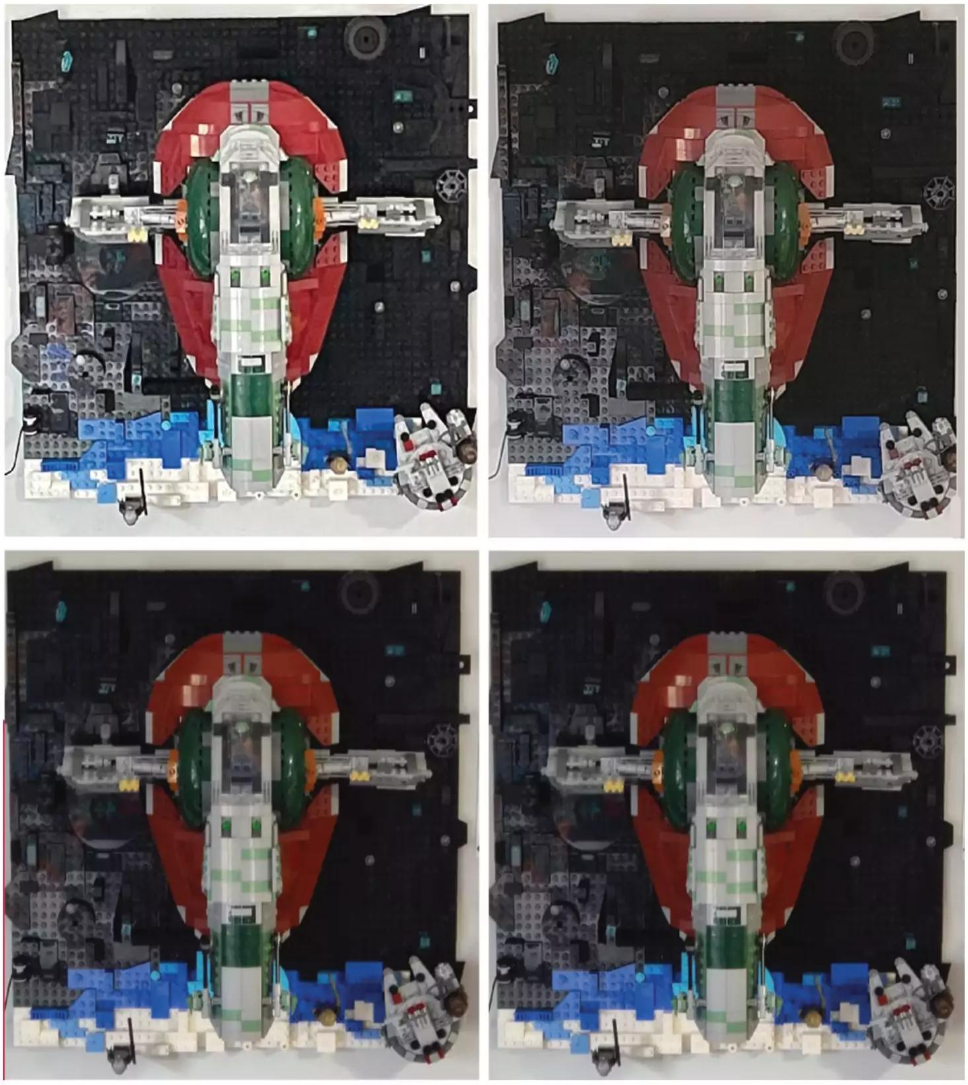
PRICE

Before we get down to the price, we need to talk about storage. The iPhone 12 starts at 64GB, while the Note 20 Ultra, OnePlus 8 Pro, and Pixel 5 have 128GB. So to keep things fair, I've bumped the iPhone 12 to the next storage tier when comparing prices.

PRICES (128GB)

Pixel 5: $699
OnePlus 8 Pro: $799
iPhone 12: $879
Note 20 Ultra: $1,300

The Galaxy Note 20 Ultra is certainly in the conversation for the phone of the year, but its price is a major detri-



The Galaxy Note 20 (top right) uses its zoom lens to its advantage, with better detail and clarity than the iPhone 12 (top left), OnePlus 8 Pro (bottom left), and Pixel 5 (bottom right).

ment. Even Apple's most expensive iPhone, the 6.7-inch iPhone 12 Pro Max, is $200 cheaper than the Note 20 Ultra with many of the same features, including a 2.5X telephoto lens. Samsung needs to seriously rethink its prices now that 5G is pretty much universal.

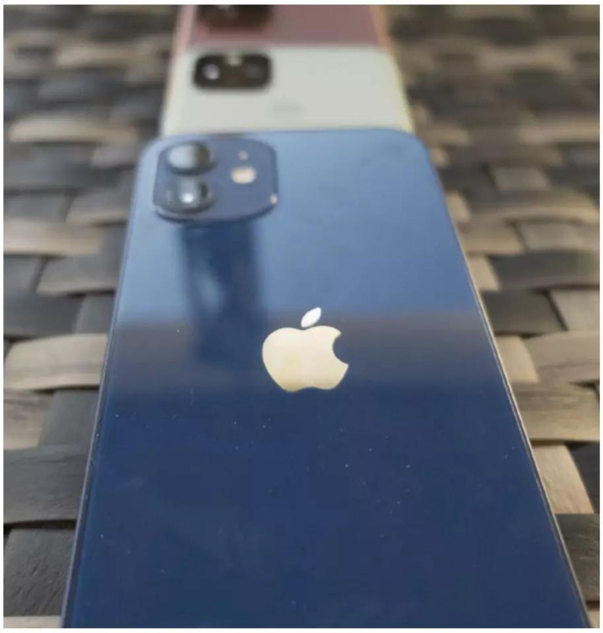
At the other end, the Pixel 5 needs to be cheaper to compete with the iPhone 12 and. more specifically, the iPhone 12 mini, which starts at $729. The Pixel 5 seems to be in something of a transitional period and there's a lot to like about Google's moves, but the value just isn't quite there.

Apple increased the price of the iPhone 12 by $130 as compared to the iPhone 11, which is no small hike. But consider that you're also getting much more for your money: namely, 5G and an OLED display. And the iPhone 12 is still more than $400 cheaper than the Note 20 Ultra and just $80 more than the cheapest OnePlus 8 Pro with 8GB of RAM.

OUR PICK: iPhone 12.

BOTTOM LINE

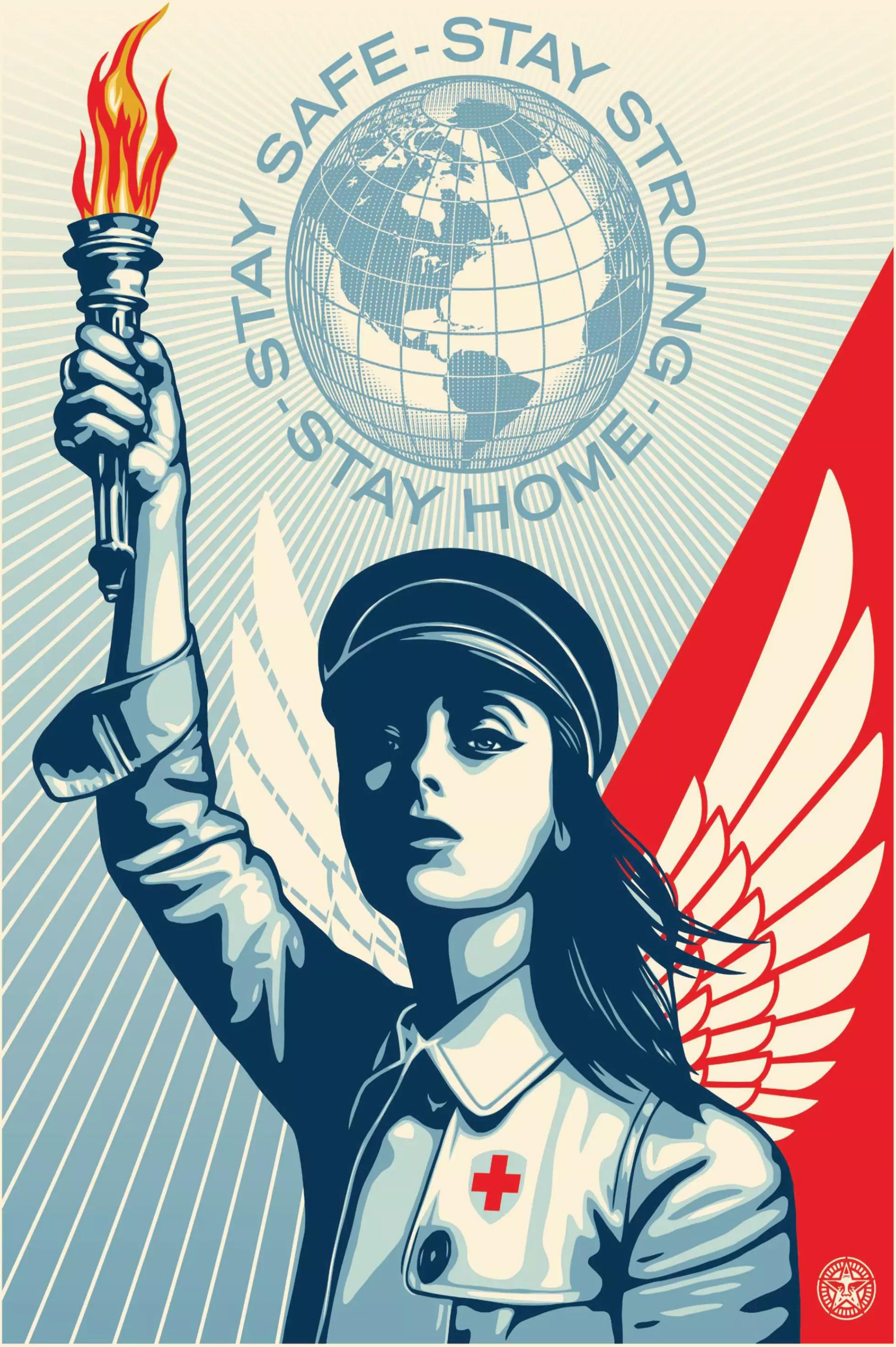
Let's revisit what I said at the start of this comparison—these are four of the best phones of the year, and they all have their strengths. The Note 20 Ultra has a gorgeous display. The OnePlus 8 Pro works hard, lasts long, and charges in a flash. The Pixel 5 has great software integration and the best camera I've ever used in a $699 Android phone.



The iPhone 12 is the phone to beat (and buy) this year.

But only Apple's iPhone 12 brings it all together so well. The design, display, processor, OS, and camera are all at the top of their game, and even if it isn't the best in every category, it's at or near the top in most of them. Not since the iPhone X has there been such a generational leap in performance and features in a mobile phone, and even with the same camera hardware, the iPhone 12 still improves on the iPhone 11. Add in the guaranteed OS updates and incredible battery life, and you've got the phone of the year—and likely most of next year, too.

The iPhone 12 is so good, in fact, that there's only one other phone I might recommend: the iPhone 12 Pro (go.macworld.com/recp). ■


STAY SAFE - STAY STRONG - STAY HOME -

Coronavirus.org

Artwork by Shepard Fairey | Amplifier.org

iPAD AIR (20

STILL THE BEST iPAD

MOST iPAD USERS DON'T NE
WHEN THIS MODEL COMES

020) REVIEW:

D FOR MOST PEOPLE

ED AN iPAD PRO, ESPECIALLY
S SO CLOSE. **BY JASON CROSS**

The new iPad Air supports the excellent (but expensive) Magic Keyboard.

Macworld EDITORS' CHOICE

Last spring, Apple revived the iPad Air branding after letting it lie dormant for several years. The 2019 iPad Air was a great compromise between the affordability of the standard iPad and the performance and features of the far more expensive iPad Pro.

The new 2020 model continues in that tradition. It's more expensive than the 2019 version, but incorporates more of the Pro's features and design and offers a substantial leap in performance.

With a starting price of $599, it's not quite the bargain the 2019 Air was at $499 (go.macworld.com/19ar), especially when you start tacking on accessories like the Apple Pencil or Magic Keyboard. Still, it's a better buy than the iPad Pro for most people and a big step up from the standard iPad.

VIDEO: **iPAD AIR (2020) REVIEW: STILL THE BEST IPAD FOR MOST PEOPLE**

Watch now at go.macworld.com/iar

Apple Pencil
100%
:58
ay, November 3
FaceTime
Calendar
Clock
Home
Photos
Camera
Reminders
Notes
Voice Memos
Contacts
Maps
Find My

The second-generation Apple Pencil is more expensive, but the magnetic attachment and charging is worth it.

TAKING CUES FROM iPAD PRO

As with the iPad Air from 2019, the 2020 model takes some cues from the iPad Pro, including a wide color display with True Tone support, but this year's Air borrows a lot more.

Apple has shifted the iPad Air to the iPad Pro's flat-edged design, ditching the home button in favor of a bigger display with smaller bezels all around. It's exactly the same size as the 11-inch iPad Pro, and even supports the Magic Keyboard made for that model.

Like with the iPad Pro, the iPad Air now has a USB-C port instead of a Lightning connector, which means easier access to external storage devices and cameras. Last year's iPad Air supported the first-generation Apple Pencil, while this year's model supports the second-generation Pencil. It costs $30 more, but the magnetic attachment and charging is a much better design.

The 8-megapixel f/2.4 camera has been swapped out for an upgraded 12-megapixel f/1.8 camera that takes much better photos and videos. The front camera is nicely improved, too, and also supports 1080p FaceTime calls.

But you don't get everything you get in an iPad Pro. That improved front camera is not accompanied by the TrueDepth module for Face ID and Animoji. Instead, Apple has incorporated a Touch ID sensor into the top button (as there is no more room around the bezel for a home button).

It's a good solution that works very well, and is easier to engage when your iPad is propped up on a keyboard or stand, but it's still inferior to Face ID. It also

Since there's no room for a home button, Apple built Touch ID into the side button.

9:41 AM Tue Sep 15
100%
Ellie Goulding
Love I'm Given
KEY
F
TIME
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algoriddim
DaBaby
BLIND (feat. Young Th...
KEY
F
TIME
-01:12
SYNC
BPM
140.0
-14.06%
70.0
SYNC
SET
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Kicks 1
Kicks 2
Kicks 3
Kicks 4
Kicks 5
Kicks 6
Claps 1
Claps 2
Claps 3
Claps 4
Clap Snr 5
Claps 6
Tops 1
Tops 2
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Tops 4
Tops 5
Tops 6
Bass 1
Bass 2
Bass 3
Bass 4
Bass 5
Bass 6
Sax 1
Sax 2
Sax 3
Sax 4
Sax 5
Sax 6
Guitar 1
Guitar 2
Guitar 3
Guitar 4
Guitar 5
Guitar 6
Piano 1
Piano 2
Piano 3
Piano 4
Piano 5
Dist Sax 6
Vocals 1
Laugh 2
Vox 3
Vox 4
Vox 5
Vox 6
70.0 BPM
Electro Swing

means no Portrait mode selfies.

You also don't get the additional ultrawide camera on the back, nor the LiDAR scanner. Those are honestly of less use to an iPad than an iPhone, so you're not missing too much.

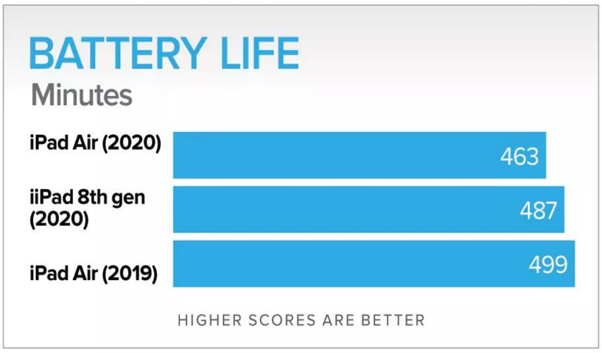
The iPad Pro starts at 128GB of storage with options up to 1TB, while the iPad Air starts at 64GB with only a single 256GB upgrade option (for an extra $150).

Perhaps the most easy-to-miss feature of the iPad Pro that is missing from the Air is the ProMotion 120Hz display, which is slightly brighter, too.

All told, the iPad Air has most of what you would want out of the iPad Pro at a starting price $200 lower. For most users, it's a no-brainer. The base iPad model (go.macworld.com/bsmd) is only $329, but is inferior to the Air in almost every way.

A14 PERFORMANCE

Perhaps the most interesting facet of the new iPad Air is that it's powered by Apple's A14 processor, the same that's in the just-released iPhone 12 Pro (go.macworld.



Battery life takes a small dip, but not enough to be concerned about.

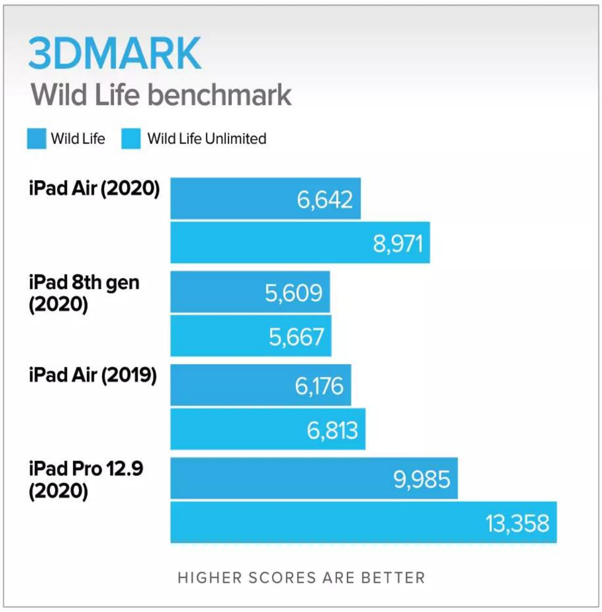
com/recp). That puts the Air in sort of a strange position, as it's actually faster in some meaningful ways than the iPad Pro with its A12z.

In our tests, single-core CPU performance is better on the A14, as is GPU compute. And while we don't have a benchmark for it, the Neural Engine used for machine learning and AI code should be much faster on the A14 as well.

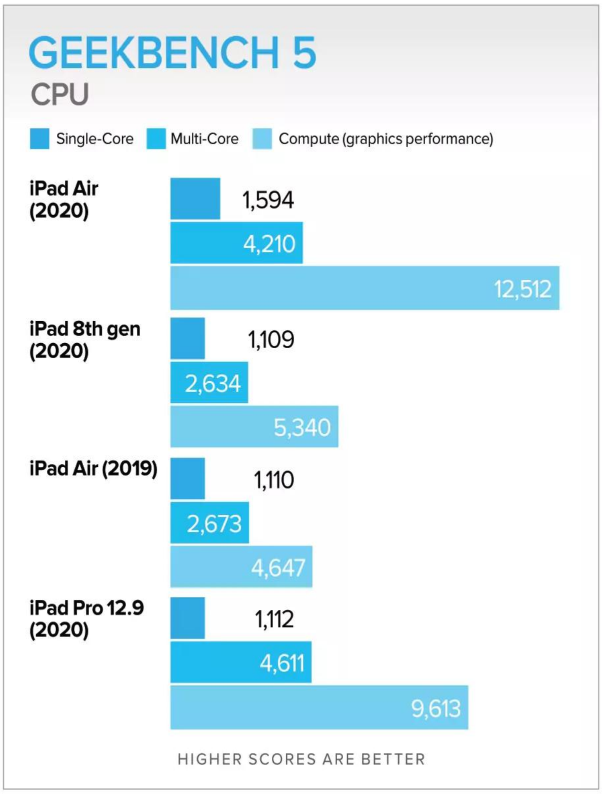
On the other hand, 3D graphics performance is substantially higher on the A12z, and multi-core performance is still a little bit better. If you're interested in an iPad Pro, you might want to wait for Apple to release one with an A14X processor in it, at which point it will once again represent a huge performance leap over the iPad Air.

In any case, the iPad Air introduced this fall runs circles around the iPad Air introduced in the spring of 2019 with its A12 processor.

The one exception is battery life. In our



The new Air's graphics performance is way better than the iPad or old Air, but can't match the iPad Pro.



The new iPad Air is, in some ways, faster than the iPad Pro.

tests, which involve setting the display to a fixed 200 nits and running the Geekbench 4 battery benchmark until the battery dies, we found the old iPad Air lasted roughly half an hour longer. It’s only about an 8 percent difference and not worth stressing over, though we always want more battery life in newer products, not less.

BOTTOM LINE

With this year’s revision of the iPad Air, Apple increased the starting price from $499 to $599 while still giving you 64GB of storage.

Despite the price hike, the 2020 iPad Air gives you more bang for your buck. It’s a lot faster—we expect that with the natural progression of chip design and manufacture—but it’s got a lot of other benefits, too.

It now copies the superior iPad Pro design, with flat edges, a USB-C port, second-gen Apple Pencil support, and compatibility with the excellent Magic Keyboard (go.macworld.com/mkbd). It’s got better cameras on front and back, and slim, symmetrical bezels around the display.

The new iPad Air is an obvious leap over the regular iPad, one that you’ll appreciate even if you don’t need faster performance. Less obvious is the need to spend $200 more for an iPad Pro. Only those who really need “pro” performance and lots of storage will really want to pay that premium, and then only after Apple releases an iPad Pro with something faster than the A12z processor. ■

●●●●½

iPad Air (2020)

PROS

- Copies the superior iPad Pro design.
- Improved cameras.
- Fantastic performance.

CONS

- No battery life improvement.

PRICE

$559

COMPANY

Apple

I didn't talk
for a very long time

Jacob Sanchez
Diagnosed with autism

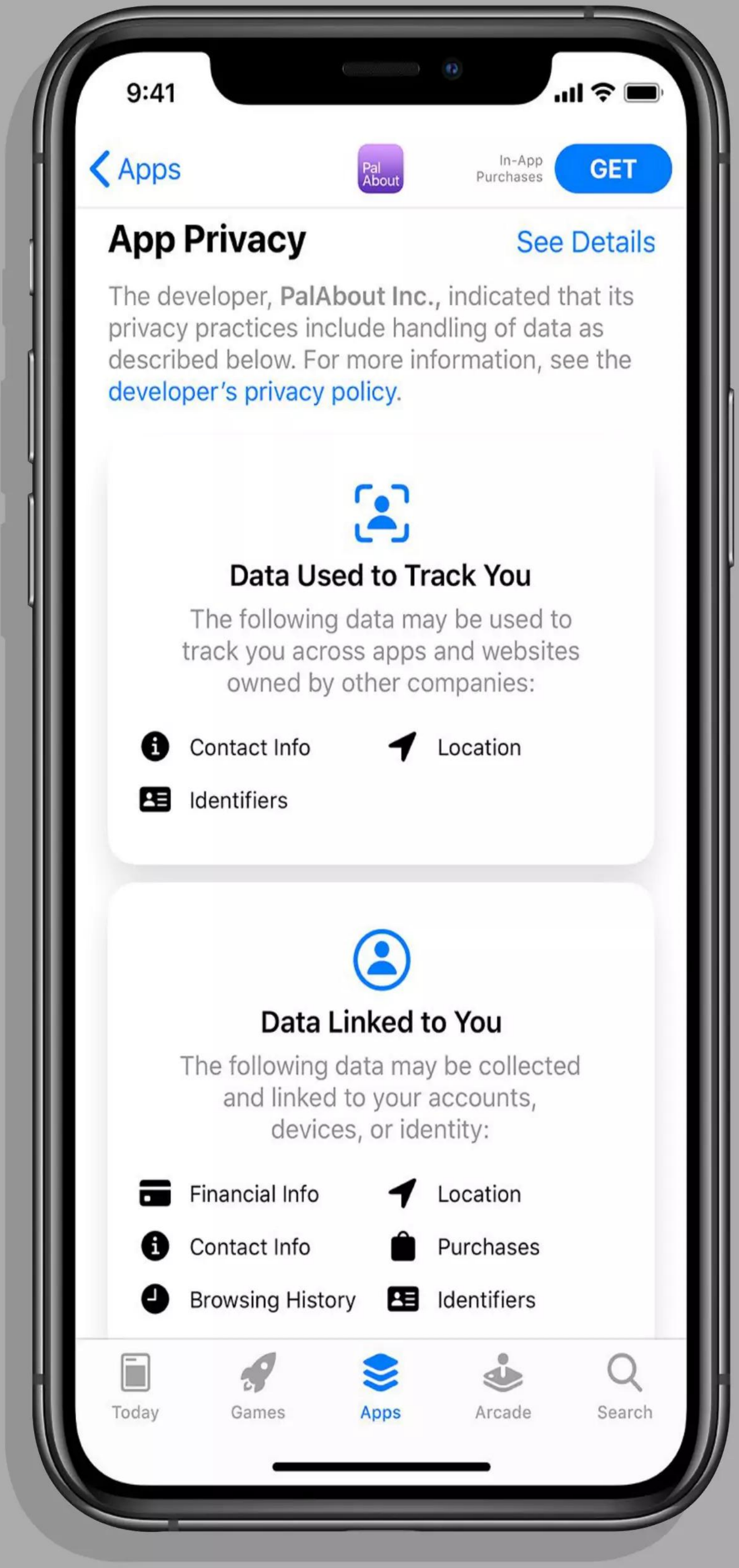
Lack of speech is a sign of autism. Learn the others at autismspeaks.org/signs.

AUTISM SPEAKS®

THE
NEW
CORNER
OFFICE

There are career paths that you might not know about. Whether you’re making a change or just starting out, you have more options than you think. Get started at **FindSomethingNew.org**

ad COUNCIL



App Privacy See Details

The developer, **PalAbout Inc.**, indicated that its privacy practices include handling of data as described below. For more information, see the developer's privacy policy.

Data Used to Track You

The following data may be used to track you across apps and websites owned by other companies:

- Contact Info
- Location
- Identifiers

Data Linked to You

The following data may be collected and linked to your accounts, devices, or identity:

- Financial Info
- Location
- Contact Info
- Purchases
- Browsing History
- Identifiers

SEVEN WAYS iOS 14 WILL HELP PROTECT YOUR PRIVACY

APPLE HAS ADDED SEVERAL WELCOME NEW PRIVACY-MINDED FEATURES TO YOUR iPHONE AND iPAD.

BY JASON CROSS

With each yearly major update of iOS, Apple tightens the screws on apps and services that seek to violate your privacy in order to turn a buck. This year is no different, with several very visible new features to help you better understand and control how your data is accessed.

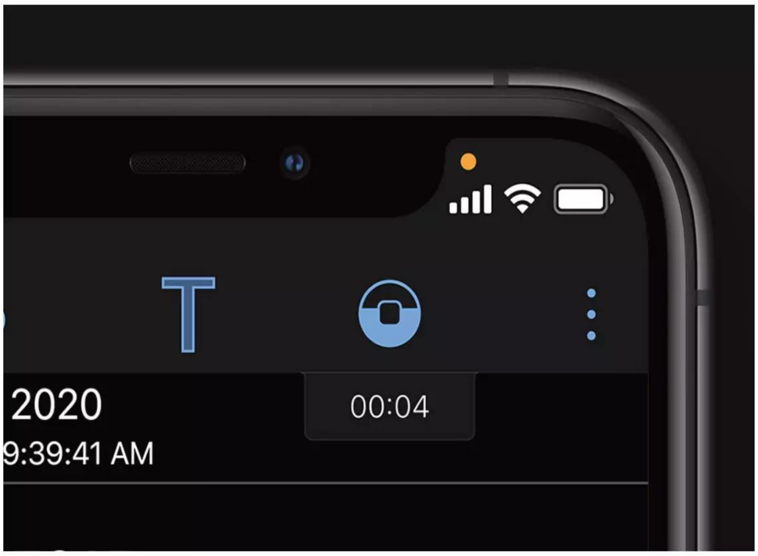
With iOS 13, Apple introduced major changes to location tracking, Safari tracking protections, and the Sign In With Apple feature, among others. You might think your iPhone and iPad already do a great job of protecting your personal data, but there's apparently plenty more Apple can do, because the privacy features of iOS 14 are numerous and substantial (they're duplicated in iPadOS 14, too). Here are the highlights.

1. MIC AND CAMERA ACCESS LIGHTS

Any time an app accesses your microphone, a little amber dot will appear in the status bar, over by where the Wi-Fi and cellular connection symbols are. When an app accesses the camera, a green dot will appear.

These are fairly universally understood as "recording" lights and they will clearly point out when an app you're using is accessing the camera or microphone at times it shouldn't.

Just since the release of the iOS 14 beta, the lights have already revealed



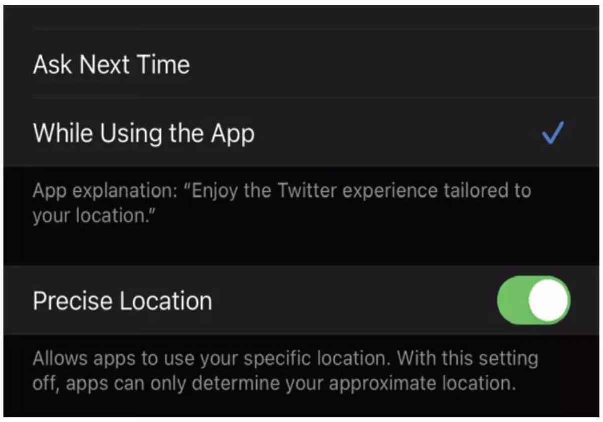
If the mic is on, an amber light will appear in the status bar. If the camera is on, a green light will appear.

sketchy behavior in several apps that have gone on to promise updates to fix the “bugs.”

2. APPROXIMATE LOCATION

When an app wants to use your location, it has to ask for your permission. In iOS 13, you can only grant permission for an app to use your location while you’re using it, or just once; the app can then further ask to use your location in the background, and you’ll get periodic reminders that it is.

In iOS 14, Apple is going further. When an app asks for location permission, it will be marked as Precise: On or Precise: Off. You can open Settings → Privacy → Location Services and toggle Precise Location on or off for each app individually.


Ask Next Time

While Using the App ✓

App explanation: “Enjoy the Twitter experience tailored to your location.”

Precise Location ●

Allows apps to use your specific location. With this setting off, apps can only determine your approximate location.

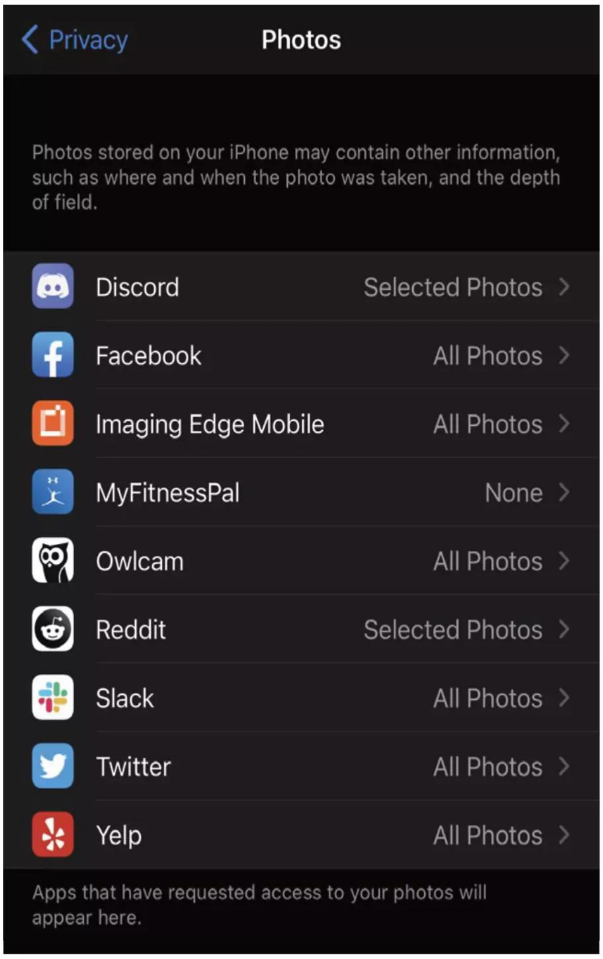
If you don’t want an app to know exactly where you are, there’s a switch for that.

Precise location is what we’re use to now, and is great for apps that need to know your location down to the approximate address—a delivery or ride-hailing app, for example. But many apps use location to do things like show local news stories or weather. If an app only needs approximate location info (the city you’re in rather than your address), you can disable precise location and somewhat preserve your privacy. Approximate location is updated much less frequently, too.

3. LIMITED PHOTOS ACCESS

When an app wants to access the photos stored on your iPhone, it has to ask for permission. That makes sense, but the all-or-nothing approach doesn’t leave a privacy-minded user much middle ground.

When an app asks for permission to



Photos stored on your iPhone may contain other information, such as where and when the photo was taken, and the depth of field.

Discord	Selected Photos
Facebook	All Photos
Imaging Edge Mobile	All Photos
MyFitnessPal	None
Owlcam	All Photos
Reddit	Selected Photos
Slack	All Photos
Twitter	All Photos
Yelp	All Photos

Apps that have requested access to your photos will appear here.

Giving an app access to your photos is no longer all-or-nothing.

access Photos in iOS 14, the operating system gives you the choice to allow access to all photos, no photos, or a new “select photos” option. You can choose specific photos or folders to give the app access too.

In Settings ➔ Privacy ➔ Photos you can change this setting on a per-app basis or change which photos you have selected to give the app access to.

In the past, some popular photo-manipulation apps have been caught uploading more pictures to their servers than just the ones you select. This puts a stop to that at the operating system level.

4. TRACKING PERMISSIONS FOR ADVERTISING

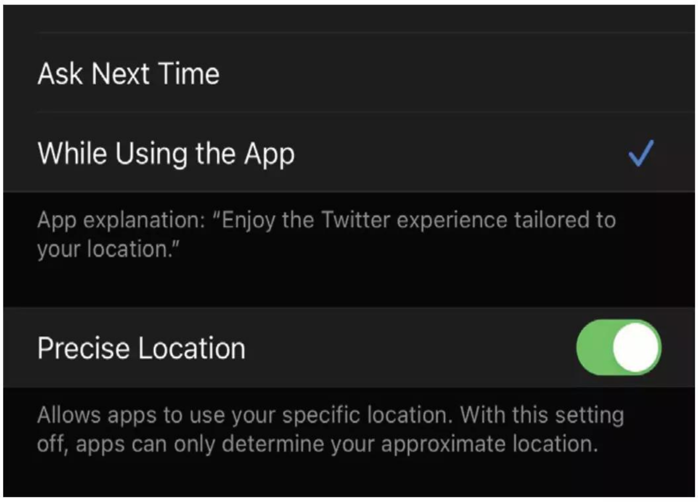
Apps use all sorts of tracking features to display tailored ads to you. They look at things like your location, or other apps installed on your iPhone, or other usage metrics.

If an app wants to track you across websites or apps owned by other companies in iOS 14, it has to pop up a permissions request.

You can open Settings ➔ Privacy ➔ Tracking and turn off Allow Apps To Request To Track if you don’t even want to be asked anymore.

A separate option in Settings ➔ Privacy ➔ Apple Advertising allows you to disable personalized apps in Apple services like the App Store, Apple News, or Stocks. Note that this won’t reduce ads, it will just prevent Apple from using any of your data to show you ads that are tailored to you.

The advertising industry, which relies on tracking everywhere you go across the web and from app to app in order to build detailed profiles of you for ad targeting, is really upset about Apple making this cross-site and cross-app tracking opt-in instead of opt-out. Apple is still including the feature in iOS 14, but is now only going


Ask Next Time

While Using the App ✓

App explanation: "Enjoy the Twitter experience tailored to your location."

Precise Location ●

Allows apps to use your specific location. With this setting off, apps can only determine your approximate location.

You can prevent apps from tracking you across apps and websites for advertising purposes.

to require apps to show the pop-up to obtain tracking permission starting early in 2021 (go.macworld.com/trpm). You'll still see the option in the Settings app, though.

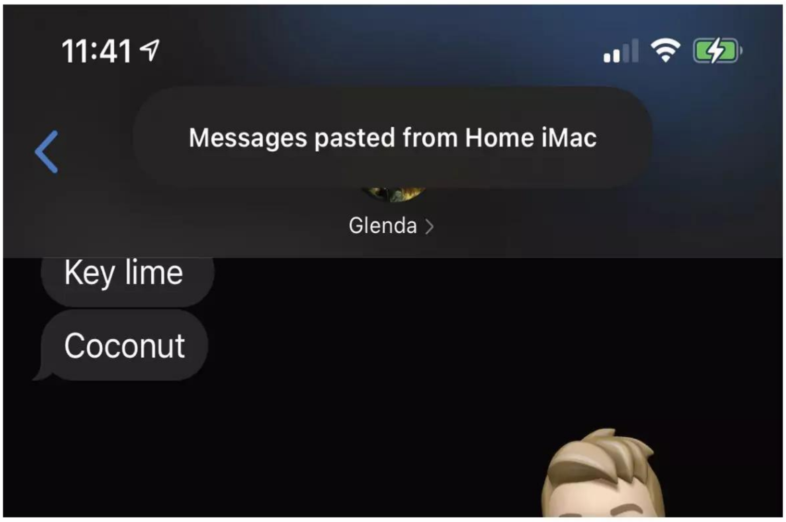
5. CLIPBOARD NOTIFICATION

When you paste something from your clipboard, iOS 14 will show a little notification stating what app accessed your clipboard, where the clipboard data comes from.

This may sound like a small thing, even a bit of an annoyance. But it's huge. Within days of the iOS 14 beta's release, dozens of apps were found to be accessing your iPhone or iPad's clipboard, sometimes as often as with every keystroke you type!

This has even more importance on Apple's ecosystem than others. A feature of Handoff called Universal Clipboard makes things you copy to your clipboard on your Mac instantly accessible on your iPhone or iPad, and vice-versa. It's really convenient for those with multiple Apple products, and it can be disabled if you want to, but you shouldn't have to give up convenience for the sake of privacy.

The clipboard notification pop-up is likely Apple's first shot across the bow. It would be aggravating to have to grant apps permission to access the contents of your clipboard all the time, but the preponderance of bad actors may force Apple's hand. Simply making the behavior obvious seems to have already done users a great service in getting apps to clean up their act.



Messages pasted from Home iMac

Key lime

Coconut

When an app accesses your clipboard, you'll know about it.

6. APP STORE PRIVACY INFO

While not yet available in the iOS 14 beta, the App Store in iOS 14 will require every developer to report its privacy practices. These will be displayed in a prominent section of the page.

Think of it like a nutrition label for privacy, with each app displaying which data it collects that can be linked with other data to personally identify you, and which data the app collects and can use to track you (including across apps and sites).

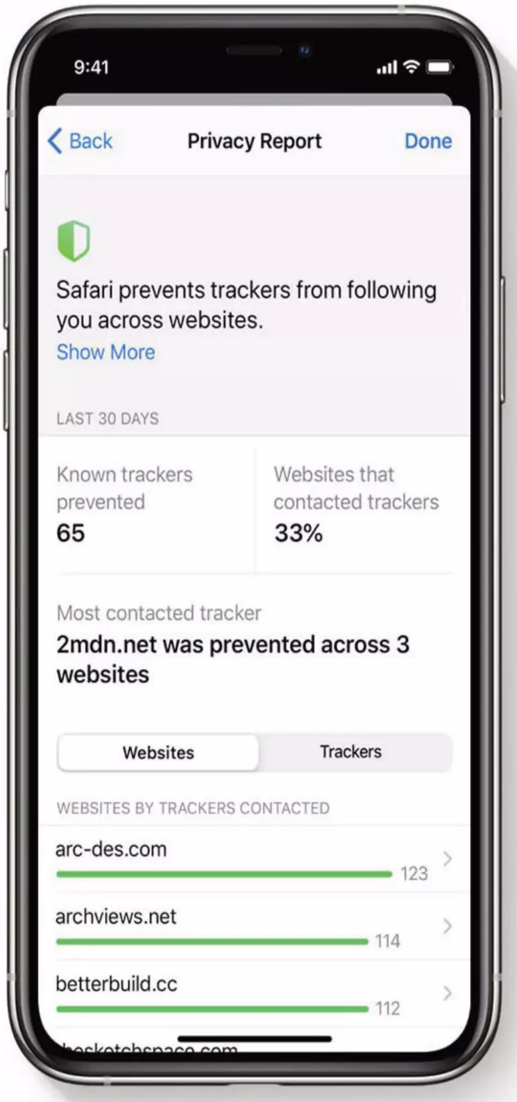
This is more important than it sounds. When an app is collecting more information than it needs to operate, it's either using that data for something not related to the product (like targeting ads), or selling it off. Apple's not stopping this behavior, yet, but it's making it more obvious to you before you even download an app.

7. SAFARI PRIVACY REPORT

Securing your privacy on your iPhone or iPad is one thing, but your data is being scooped up all over the web, too. In addition to new security features like password monitoring, Apple is building on the features built into Safari to prevent cross-site tracking and cookies.

Building on the theme of showing users just how widespread user tracking has become, Safari in iOS, iPadOS, and macOS Big Sur features a new privacy report. In macOS it is displayed on new tabs, on iOS you tap the text icon on the left side of the address bar and select Privacy Report.

This screen shows you how many trackers Safari has blocked, which websites have the most trackers, and which trackers are most prominent. ■



Safari prevents trackers from following you across websites.
Show More

LAST 30 DAYS

Known trackers prevented	Websites that contacted trackers
65	33%

Most contacted tracker
2mdn.net was prevented across 3 websites

WEBSITES BY TRACKERS CONTACTED

arc-des.com	123
archviews.net	114
betterbuild.cc	112

Safari shows you how well it's protecting you from trackers. It's partly bragging, partly to make you realize how much of the web is tracking your every move.

Our *Shero*

"I want our retirement savings to be as strong as our partnership."

Visit **AceYourRetirement.org** for:

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- Free personalized roadmap based on your retirement goals
- Free tips to start boosting your retirement savings now

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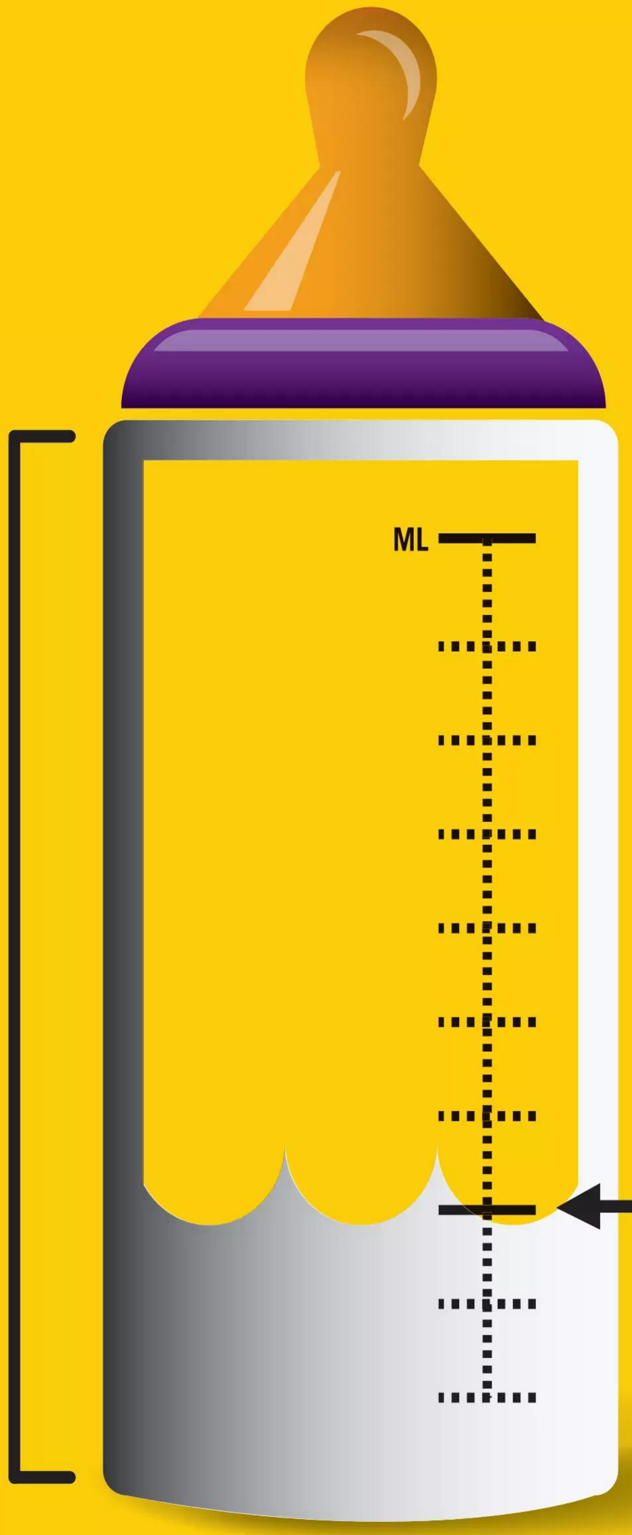


THE NUMBER
OF PEOPLE
WHO
THINK
THEY HAVE
THEIR CHILD IN
THE RIGHT
SEAT.

THE ONES
WHO
ACTUALLY
DO.

KNOW FOR SURE

IF YOUR CHILD IS IN THE RIGHT CAR SEAT.

Ad Council

VISIT SAFERCAR.GOV/THERIGHTSEAT

NHTSA
www.nhtsa.gov

Child Car Safety

Parallels Desktop 16 for Mac: Standing at the crossroads of Mac's future

Reengineered with macOS Big Sur in mind.

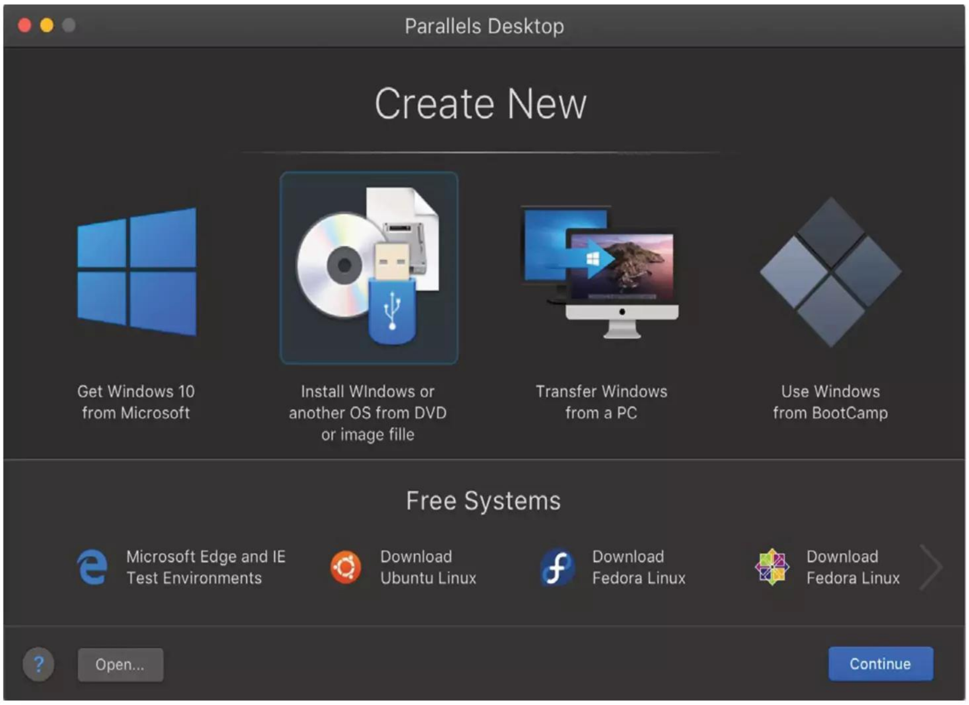
BY J.R. BOOKWALTER

Macworld EDITORS' CHOICE

At this year's WWDC, the Mac took a giant step closer to iOS in terms of hardware. The announcement of a transition to ARM-based Apple silicon over the next two years sent a chill down the spine of everyone running Windows via Boot Camp, since there's no indication at this writing such a feature will remain feasible without Intel inside.

This potential roadblock applies equally to virtual machines, and despite

IMAGE: COREL


Parallels Desktop
Create New
Get Windows 10 from Microsoft
Install Windows or another OS from DVD or image fille
Transfer Windows from a PC
Use Windows from BootCamp
Free Systems
Microsoft Edge and IE Test Environments
Download Ubuntu Linux
Download Fedora Linux
Download Fedora Linux
?
Open...
Continue

The Installation Assistant makes it a snap to install any supported operating system as a VM, including the macOS Big Sur public beta.

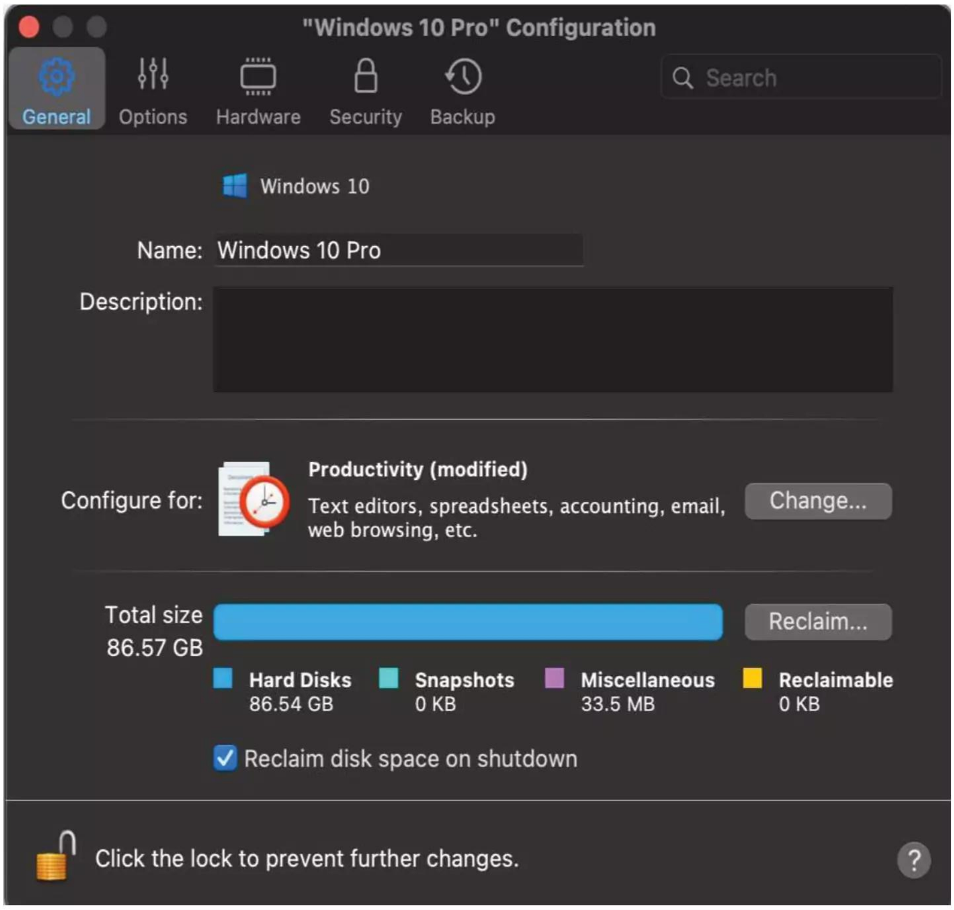
the virtualization experts at Parallels successfully demonstrating Linux running on ARM, the company remains tight-lipped about the fate of Windows. In the meantime, they've released the latest annual upgrade to its flagship Mac software, which once again arrives with plenty of welcome improvements and—for the moment at least—one unfortunate limitation.

MOVING FORWARD

According to the developer, Parallels Desktop 16 for Mac is the result of a "25-man-year effort" to ditch traditional virtualization kernel extensions ("kexts" in code-speak), the stuff which allows this software to efficiently run other operating systems in tandem with macOS in the first place. This enormous effort was necessary because Apple is kicking third-party kexts to the curb once and for all when macOS Big Sur arrives this fall.

In its place, Apple incorporated new macOS frameworks for developers to tap into. The immediate result is that Parallels Desktop 16 for Mac now launches up to twice as fast as last year's impressive version 15, as well as being 20 percent faster at resuming a Windows virtual machine (VM) or when using software which takes advantage of DirectX.

For those who frequently print documents from Windows, there's more good news. Parallels Desktop 16 for Mac now supports everything available on shared printers connected to a host Mac, enabling welcome features like the ability to use envelopers or change paper sizes as well as duplex printing. Last but not



"Windows 10 Pro" Configuration

Windows 10

Name: Windows 10 Pro

Description:

Configure for: **Productivity (modified)**
Text editors, spreadsheets, accounting, email, web browsing, etc.

Total size 86.57 GB

Hard Disks	Snapshots	Miscellaneous	Reclaimable
86.54 GB	0 KB	33.5 MB	0 KB

☑ Reclaim disk space on shutdown

Click the lock to prevent further changes.

Automatically keep VMs from hogging drive space with the new "Reclaim disk space on shutdown" option.

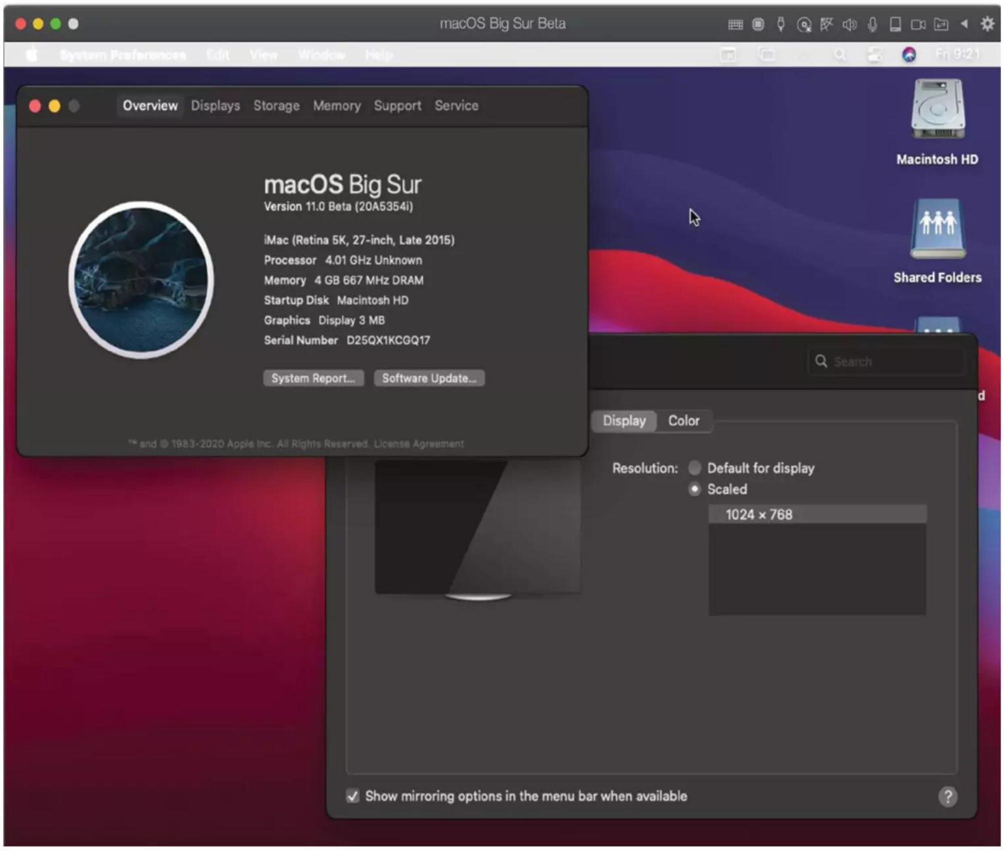
least, the new "Reclaim disk space on shutdown" option now makes the process of recovering storage temporarily consumed by a guest OS effortless. Check a box, and Parallels Desktop 16 for Mac takes care of this housekeeping automatically, every time you shut down that VM.

DAILY DRIVER

Although many survived the rocky transition to macOS Catalina relatively unscathed, the move prompted us to rely more heavily on virtualization. Rather than occasional use with Windows or to dabble in other operating systems, Parallels Desktop became a lifeline for running 32-bit Mac applications effectively abandoned after last year's "app-ocalypse."

One rationale for clinging to old software was venerable accounting software AccountEdge Pro (formerly MYOB). Developer Acclivity cowardly backpedaled on 64-bit Catalina support earlier this year, claiming its 30-year-old codebase "proved too outdated" for engineers to make work.

The solution was to install macOS Mojave as a Parallels virtual machine to run AccountEdge and other 32-bit refugees like a Primera Bravo SE disc printer. One nagging downside to this otherwise flawless plan was lack of support for the Caps Lock key, which


macOS Big Sur Beta
System Preferences
Edit
View
Window
Help
Fri 9:21
Overview
Displays
Storage
Memory
Support
Service
System Report...
Software Update...
™ and © 1983-2020 Apple Inc. All Rights Reserved. License Agreement
Macintosh HD
Shared Folders
Search
Display
Color
Show mirroring options in the menu bar when available

macOS Big Sur
Version 11.0 Beta (20A5354i)

iMac (Retina 5K, 27-inch, Late 2015)
Processor 4.01 GHz Unknown
Memory 4 GB 667 MHz DRAM
Startup Disk Macintosh HD
Graphics Display 3 MB
Serial Number D25QX1KCGQ17

Resolution: ○ Default for display
● Scaled
1024 × 768

☑ Show mirroring options in the menu bar when available

Although Parallels Desktop 16 works with the latest macOS Big Sur public beta, graphics performance on a Catalina host is currently less than ideal.

has never properly worked in Parallels within Mac guests.

Imagine the surprise after booting up Mojave for the first time in Parallels Desktop 16 for Mac to discover the host software finally—finally!—recognizes the Caps Lock key with a Mac guest. Admittedly, this is a small improvement—one the company doesn't even mention in release notes!—but the convenience makes a huge difference in everyday use, so we consider this is a must-have upgrade for fellow keyboard jockeys.

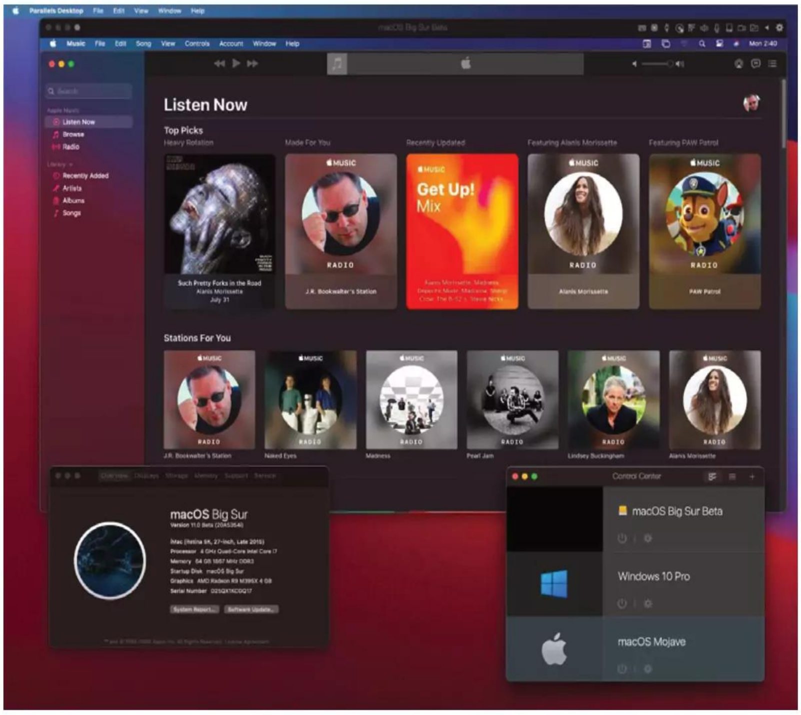
BIG SUR-PRISE

For several years now, new editions of Parallels Desktop remained in lock step with Apple's annual software releases. This year is no exception, and I'm happy to report that installing the macOS Big Sur public beta as a Parallels Desktop 16 for Mac virtual machine was effortless. After downloading the installer from Apple, all that's required are a few clicks of the mouse. thanks to the Installation Assistant.

Unfortunately, the under-the-hood changes required to embrace Apple's new frameworks in Parallels Desktop 16 for Mac have created a temporary setback for current macOS users. Those hoping to test drive Big Sur as a virtual machine running on a Catalina host will experience reduced graphics performance, with a screen resolution restricted to 1024x768. That means no Retina Display support or Coherence view, which hides the guest desktop so virtualized apps run alongside those in the host OS.

Parallels blames this limitation on native 3D graphics implementation in Apple's beta OS, a situation which should be resolved around the time Big Sur is released. For the time being, the recommended method to run a Big Sur VM is from a Big Sur host—an option which works quite well, but defeats a key advantage of using virtualization software in the first place.

Even with this workaround, some issues remain. Using the latest Big Sur Beta 5 as a host, you'll need to tweak the Hardware configuration for each VM, selecting Apple as the hypervisor instead of Parallels to avoid a kernel panic when booting a guest OS. Those jumping back and forth between hosts should consider installing separate Big Sur VMs for the time being. On Catalina, I was unable to boot past the Apple logo after reinstalling Parallels Tools inside a Big Sur VM.



Until the official release of macOS Big Sur this fall, the optimal way to run a public beta VM is from a bootable external drive using the same operating system.

Parallels Desktop 16 for Mac

PROS

- Under-the-hood overhaul improves launch times, performance.
- All host printer features now recognized in Windows guest.

CONS

- Poor graphics performance with Big Sur public beta VM on Catalina host.
- Kernel panic on Big Sur Beta 5 VM with Parallels hypervisor enabled.

PRICE

$70

COMPANY

Corel

BOTTOM LINE

Parallels Desktop 16 for Mac is another solid upgrade solidifying the company's tradition of continued improvements, but the lack of native Big Sur graphics support on Catalina—which the company hasn't been very transparent about—is a bummer for those wanting to test drive the latest macOS. ■

Screen mismatch in Keynote? There's a button to fix that

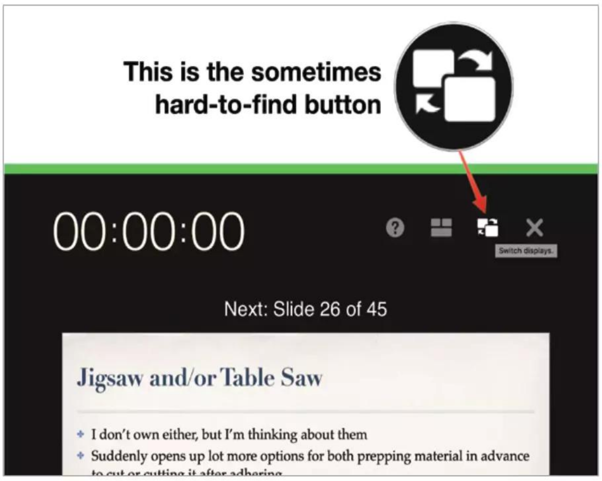
A disappearing button will provide the answer when you're trying to get your Keynote slides on the right screen.

BY GLENN FLEISHMAN

Almost everything about Keynote is good to great. Apple created a version of the software originally for Steve Jobs's presentations, and effectively rolled that out to all Mac users. It reflects his aesthetics and Apple's. But there's one setting that I've seen bedevil people—and if you search for an answer, you're unlikely to find it, because of the way you have to formulate the question!

Three years ago, I was at a wood

IMAGE: APPLE



This is the sometimes hard-to-find button

00:00:00

Switch displays.

Next: Slide 26 of 45

Jigsaw and/or Table Saw

- I don't own either, but I'm thinking about them
- Suddenly opens up lot more options for both prepping material in advance

The Switch Displays button disappears if you haven't moved the mouse recently.

printing type aficionados (go.macworld.com/wprt) gathering on the shores of Lake Michigan, when my friend and mentor Jenny had a crisis with her presentation. Despite the help of an expert A/V manager, in Keynote's presentation mode, they could only get the slideshow part to appear on her laptop, while the presenter's notes showed up on screen.

A single click solves the problem, but Keynote almost hides the answer, because some buttons on the presenter's display fade away unless the mouse has recently been jiggled.

If your presentation is active on a two-monitor (laptop plus projector or two-screen system), via Play → Play Slideshow, the "second" screen shows an array of tools for a presenter. Move the mouse to its upper-right corner, and buttons appear. Wait a moment and they're gone again.

Those buttons from left to right are show/hide keyboard shortcuts, customize presenter display, switch displays, and exit slide show.

Click the third button—switch displays—and the slideshow and presenter display swaps screens. It's that easy, but that difficult to find! The next time you're watching someone struggle with putting their tools on the correct display, you can whip out this bit of wisdom and help the show go on. ■

THE GREENHOUSE EFFECT
EARTH SCIENCE
CO₂ AND OTHER GASES IN THE ATMOSPHERE TRAP HEAT, KEEPING THE EARTH WARM.
INCOMING SOLAR RADIATION
ATMOSPHERE
MacBook Air

Nifty File Lists: Easily turn files and folders into metadata spreadsheets

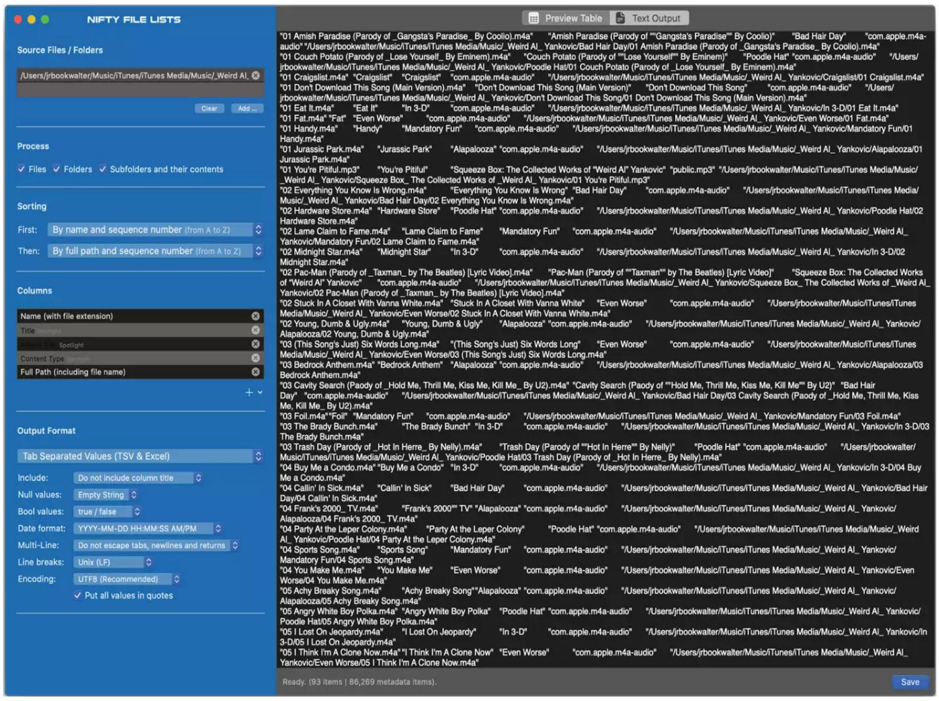
Save file lists in Microsoft Excel, Apple Numbers and Pages-friendly CSV (Comma-Separated Values), TSV (Tab-Separated Values), and even HTML formats.

BY J.R. BOOKWALTER

When it comes to batch renaming or altering file and folder attributes, few utilities do it better than A Better Finder Rename (go.macworld.com/fnrn) and A Better Finder Attributes (go.macworld.com/fnat). (Due to Apple restrictions on using "Finder" in the name, Mac App Store users know them as Better Rename [go.macworld.com/btrn)] and File Multi Tool [go.macworld.com/flml] instead.) Developer Frank Reiff's latest file-related software has nothing to do with manipulating data, but rather generating lists from it.

If you've ever wanted to make an

IMAGE: PUBLICSPACE.NET



Source Files / Folders

/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_

Process

✓ Files ✓ Folders ✓ Subfolders and their contents

Sorting

First: By name and sequence number (from A to Z)
Then: By full path and sequence number (from A to Z)

Columns

Name (with file extension)
Title
Spotlight
Content Type
Full Path (including file name)

Output Format

Tab Separated Values (TSV & Excel)
Include: Do not include column title
Null values: Empty String
Bool values: true / false
Date format: YYYY-MM-DD HH:MM:SS AM/PM
Multi-Line: Do not escape tabs, newlines and returns
Line breaks: Unix (LF)
Encoding: UTF8 (Recommended)
✓ Put all values in quotes

```
"01 Amish Paradise (Parody of _Gangsta's Paradise_ By Coolio).m4a"    "Amish Paradise (Parody of ""Gangsta's Paradise"" By Coolio)"    "Bad Hair Day"    "com.apple.m4a-
audio" "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Bad Hair Day/01 Amish Paradise (Parody of _Gangsta's Paradise_ By Coolio).m4a"
"01 Couch Potato (Parody of _Lose Yourself_ By Eminem).m4a"    "Couch Potato (Parody of ""Lose Yourself"" By Eminem)"    "Poodle Hat" "com.apple.m4a-audio"    "/Users/
jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Poodle Hat/01 Couch Potato (Parody of _Lose Yourself_ By Eminem).m4a"
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"01 Don't Download This Song (Main Version).m4a"    "Don't Download This Song (Main Version)"    "Don't Download This Song"    "com.apple.m4a-audio"    "/Users/
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"01 Eat It.m4a"    "Eat It"    "In 3-D"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/In 3-D/01 Eat It.m4a"
"01 Fat.m4a" "Fat"   "Even Worse"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Even Worse/01 Fat.m4a"
"01 Handy.m4a"    "Handy"    "Mandatory Fun"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Mandatory Fun/01
Handy.m4a"
"01 Jurassic Park.m4a"    "Jurassic Park"    "Alapalooza" "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Alapalooza/01
Jurassic Park.m4a"
"01 You're Pitiful.mp3"    "You're Pitiful"    "Squeeze Box: The Collected Works of "Weird Al" Yankovic"  "public.mp3"  "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/
_Weird Al_ Yankovic/Squeeze Box_ The Collected Works of _Weird Al_ Yankovic/01 You're Pitiful.mp3"
"02 Everything You Know Is Wrong.m4a"    "Everything You Know Is Wrong"  "Bad Hair Day"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/
Music/_Weird Al_ Yankovic/Bad Hair Day/02 Everything You Know Is Wrong.m4a"
"02 Hardware Store.m4a"  "Hardware Store"    "Poodle Hat" "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Poodle Hat/02
Hardware Store.m4a"
"02 Lame Claim to Fame.m4a"    "Lame Claim to Fame"    "Mandatory Fun"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_
Yankovic/Mandatory Fun/02 Lame Claim to Fame.m4a"
"02 Midnight Star.m4a"    "Midnight Star"    "In 3-D"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/In 3-D/02
Midnight Star.m4a"
"02 Pac-Man (Parody of _Taxman_ by The Beatles) [Lyric Video].m4a"    "Pac-Man (Parody of ""Taxman"" by The Beatles) [Lyric Video]"    "Squeeze Box: The Collected Works
of "Weird Al" Yankovic"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Squeeze Box_ The Collected Works of _Weird Al_
Yankovic/02 Pac-Man (Parody of _Taxman_ by The Beatles) [Lyric Video].m4a"
"02 Stuck In A Closet With Vanna White.m4a"  "Stuck In A Closet With Vanna White"    "Even Worse"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes
Media/Music/_Weird Al_ Yankovic/Even Worse/02 Stuck In A Closet With Vanna White.m4a"
"02 Young, Dumb & Ugly.m4a"    "Young, Dumb & Ugly"    "Alapalooza" "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/
Alapalooza/02 Young, Dumb & Ugly.m4a"
"03 (This Song's Just) Six Words Long.m4a"    "(This Song's Just) Six Words Long"    "Even Worse"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes
Media/Music/_Weird Al_ Yankovic/Even Worse/03 (This Song's Just) Six Words Long.m4a"
"03 Bedrock Anthem.m4a" "Bedrock Anthem"    "Alapalooza" "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Alapalooza/03
Bedrock Anthem.m4a"
"03 Cavity Search (Paody of _Hold Me, Thrill Me, Kiss Me, Kill Me_ By U2).m4a" "Cavity Search (Paody of ""Hold Me, Thrill Me, Kiss Me, Kill Me"" By U2)"  "Bad Hair
Day"  "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Bad Hair Day/03 Cavity Search (Paody of _Hold Me, Thrill Me, Kiss
Me, Kill Me_ By U2).m4a"
"03 Foil.m4a""Foil"  "Mandatory Fun"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Mandatory Fun/03 Foil.m4a"
"03 The Brady Bunch.m4a"    "The Brady Bunch"  "In 3-D"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/In 3-D/03
The Brady Bunch.m4a"
"03 Trash Day (Parody of _Hot In Herre_ By Nelly).m4a"    "Trash Day (Parody of ""Hot In Herre"" By Nelly)"    "Poodle Hat" "com.apple.m4a-audio"    "/Users/jrbookwalter/
Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Poodle Hat/03 Trash Day (Parody of _Hot In Herre_ By Nelly).m4a"
"04 Buy Me a Condo.m4a" "Buy Me a Condo"  "In 3-D"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/In 3-D/04 Buy
Me a Condo.m4a"
"04 Callin' In Sick.m4a"    "Callin' In Sick"    "Bad Hair Day"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Bad Hair
Day/04 Callin' In Sick.m4a"
"04 Frank's 2000_ TV.m4a"    "Frank's 2000"" TV" "Alapalooza" "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/
Alapalooza/04 Frank's 2000_ TV.m4a"
"04 Party At the Leper Colony.m4a"    "Party At the Leper Colony"    "Poodle Hat" "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird
Al_ Yankovic/Poodle Hat/04 Party At the Leper Colony.m4a"
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Mandatory Fun/04 Sports Song.m4a"
"04 You Make Me.m4a"    "You Make Me"    "Even Worse"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/Even
Worse/04 You Make Me.m4a"
"05 Achy Breaky Song.m4a"    "Achy Breaky Song""Alapalooza" "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/
Alapalooza/05 Achy Breaky Song.m4a"
"05 Angry White Boy Polka.m4a"  "Angry White Boy Polka"  "Poodle Hat" "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/
Poodle Hat/05 Angry White Boy Polka.m4a"
"05 I Lost On Jeopardy.m4a"    "I Lost On Jeopardy"    "In 3-D"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_ Yankovic/In
3-D/05 I Lost On Jeopardy.m4a"
"05 I Think I'm A Clone Now.m4a" "I Think I'm A Clone Now"  "Even Worse"    "com.apple.m4a-audio"    "/Users/jrbookwalter/Music/iTunes/iTunes Media/Music/_Weird Al_
Yankovic/Even Worse/05 I Think I'm A Clone Now.m4a"
```

Ready. (93 items | 86,269 metadata items).

Load up a bunch of files and folders, and Nifty File Lists can create an Excel-compatible spreadsheet in a matter of seconds.

Excel-compatible spreadsheet from files on your hard drive, that's exactly what Nifty File Lists (go.macworld.com/nfty) does. Add files or folders, choose your desired columns from an extensive range of options, and this utility outputs a list as common CSV or TSV files which can be opened by number-crunching apps like Microsoft Excel and Apple Numbers, or popular database software FileMaker Pro.

Nifty File Lists also includes a convenient option to copy data to the clipboard and paste directly into a spreadsheet instead, great for cutting down on unnecessary file clutter while creating large batches of lists. Web developers can even output lists as HTML 5 or skip a step by copying data straight into their preferred HTML editor software instead.

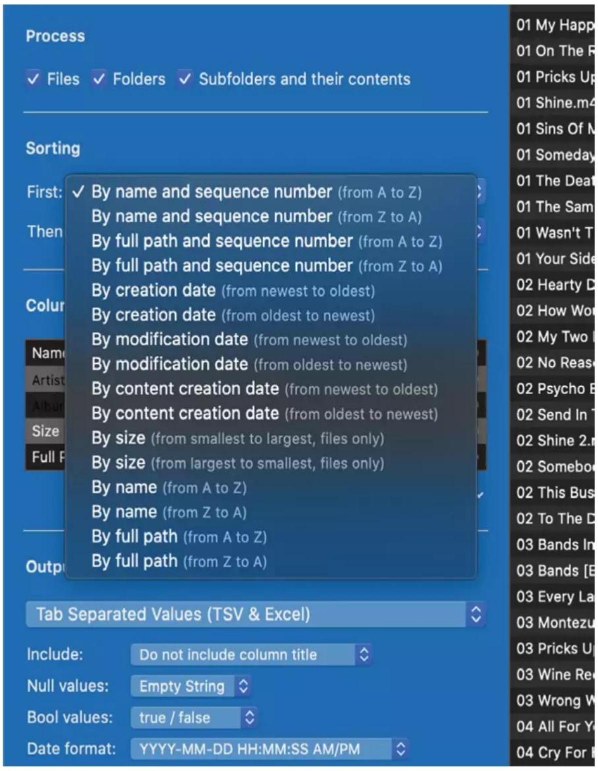
Columns can be customized to include more than 315 potential metadata types across 11 different categories, including digital photo-specific EXIF, GPS, and IPTC options as well as ID3 and other common data found in music and video files. As if that wasn't comprehensive enough, Nifty File Lists is also capable of extracting attributes from Spotlight metadata, providing maximum compatibility with AAC-encoded audio files like those purchased from iTunes. (Music lovers take note: Spotlight and ID3 make up the lion's share of the offered metadata options.)

SWIFT AND NIFTY

Written entirely in Swift and taking full advantage of the latest macOS multi-threading capabilities, Nifty File Lists is definitely a speed demon, even when adding or processing thousands of files at a time. It's also quite sparse—the app has zero preferences of any kind, with all options configured from the blue panel at left.

It's here where you add Source Files/Folders (or clear the current batch to start over); choose to Process only files, folders, and/or subfolders; select from a variety of Sorting options; add desired Columns; and finally, determine options for the Output Format, including date, line breaks, and encoding. On the right side of the window, there's a live Preview Table of the selected columns, or you can switch to view the final Text Output instead.

Although Nifty File Lists is fairly straightforward, the first version lacks some of the user interface spit and polish the developer's other apps are known for. While you can manually arrange columns from the left-hand panel via drag and drop, there's no way to do this from the Preview Table, which would have been a more intuitive approach.



Process

☑ Files ☑ Folders ☑ Subfolders and their contents

Sorting

First: ✓ By name and sequence number (from A to Z)

Tab Separated Values (TSV & Excel)

Include: Do not include column title

Null values: Empty String

Bool values: true / false

Date format: YYYY-MM-DD HH:MM:SS AM/PM

Then
Colur
Nam
Artist
Albur
Size
Full F
Outp
By name and sequence number (from A to Z)
By name and sequence number (from Z to A)
By full path and sequence number (from A to Z)
By full path and sequence number (from Z to A)
By creation date (from newest to oldest)
By creation date (from oldest to newest)
By modification date (from newest to oldest)
By modification date (from oldest to newest)
By content creation date (from newest to oldest)
By content creation date (from oldest to newest)
By size (from smallest to largest, files only)
By size (from largest to smallest, files only)
By name (from A to Z)
By name (from Z to A)
By full path (from A to Z)
By full path (from Z to A)
01 My Happ
01 On The R
01 Pricks Up
01 Shine.m4
01 Sins Of M
01 Someday
01 The Deat
01 The Sam
01 Wasn't T
01 Your Side
02 Hearty D
02 How Wo
02 My Two
02 No Reas
02 Psycho E
02 Send In
02 Shine 2.
02 Somebo
02 This Bus
02 To The D
03 Bands In
03 Bands [E
03 Every La
03 Montezu
03 Pricks U
03 Wine Re
03 Wrong W
04 All For Y
04 Cry For

All the usual file sorting options are here, but Nifty File Lists offers no way to create custom sort options using columns.

Despite offering 16 ways to sort results by name, date, size, path, and other common filters (not to mention two different methods, First and Then), there are no custom sorting options beyond these basic parameters. A more Mac-like experience would have been to click on one or more column headers to control how data gets sorted. Worse yet, once you have everything set up the way you like, there's no way to save those options as a preset to reuse again in the future.

Nifty File Lists

PROS

- Easily create metadata list from files, folders.
- CSV, TSV, HTML, copy to clipboard output formats.
- Quickly add, process thousands of files at once.

CONS

- Columns can't be arranged from Preview Table.
- No custom sort options.
- Configurations can't be saved as a preset.

PRICE

$18

COMPANY

Publicspace.net

BOTTOM LINE

For what is admittedly a niche product, Nifty File Lists does what it promises, despite the occasionally unintuitive UI and lack of custom sort options. ■

How to use a Mac laptop or iMac with a broken display

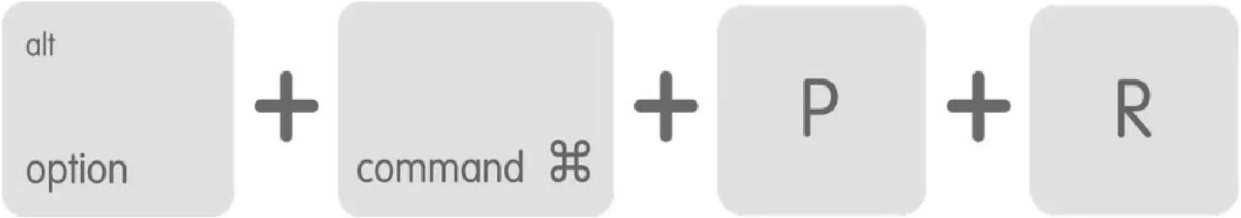
A few options can work, depending on the damage and your model.

BY GLENN FLEISHMAN

If you have a Mac laptop or iMac with a display that's been damaged or which no longer turns on, but you're sure the computer is still functioning, a repair may not be required to extract all its data or continue using it.

(In fact, without a paid AppleCare+ for Mac plan, repair costs for a display often far exceed a Mac's value unless a repair shop can find a refurbished or salvaged display. It may be cheaper or not much more expensive to simply buy a used Mac of the same vintage with a working monitor.)

IMAGE: PIXABAY



Press this key combination to reset your Mac's NVRAM.

USE AN EXTERNAL MONITOR TO KEEP IT ALIVE OR EXTRACT DATA

All Mac laptops and iMacs of the last many years support an external monitor, though the particular adapter and type varies based on the vintage of Mac:

1. Determine your Mac model and the kind of monitor and cable you need.
2. Shut down the Mac if it's running. (If you can't see the display well enough to select Shut Down, press and hold the power button until it powers down, which is about 10 seconds.)
3. Attach the monitor.
4. Start up the Mac. If you're lucky, the monitor is enabled with display mirroring, so you see exactly on the monitor what would appear on the internal display.

If the external monitor shows the image of a second screen instead of a mirror of the internal display:

> See if you can bring up the Displays preference pane and check the Mirror Displays box in the Arrangement tab. Even if you can't see it, you might be able to grab the top of the window with the cursor on the monitor that's invisible to you and drag it to the monitor you can see! It's a little like those terrible claw toy machines—but without being able to even see the claw or the toy.

> With a Mac laptop, shut the computer's lid, which may transfer the display to the external monitor. You'll need an external keyboard, too.

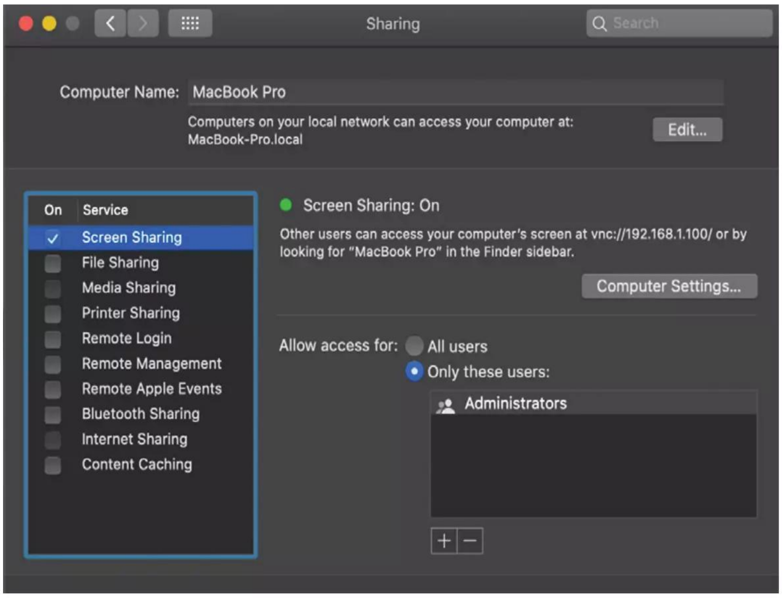
> Try restarting the Mac and then reset its NVRAM or PRAM per Apple's instructions (go.macworld.com/rset) at startup. This might switch to mirrored displays.

If any of that works, you can continue to use the Mac normally, or use the second display to manage transferring data from it.

CONNECT VIA SCREEN SHARING OR VNC

macOS allows remote screen access via a local network using Bonjour, but only if you enabled Screen Sharing in the Sharing preference pane. If you might have done so, follow these steps:

1. Power the Mac up.


Sharing
Search
Edit...
On
Service
☑ Screen Sharing
☐ File Sharing
☐ Media Sharing
☐ Printer Sharing
☐ Remote Login
☐ Remote Management
☐ Remote Apple Events
☐ Bluetooth Sharing
☐ Internet Sharing
☐ Content Caching
Computer Settings...
+ −

Computer Name: MacBook Pro

Computers on your local network can access your computer at:
MacBook-Pro.local

Screen Sharing: On

Other users can access your computer's screen at vnc://192.168.1.100/ or by looking for "MacBook Pro" in the Finder sidebar.

Allow access for: ○ All users
● Only these users:
Administrators

Enable Screen Sharing in the Sharing preference pane.

2. In the Finder on any other Mac on the same network look in the Locations section in the sidebar in any window. Does the Mac's name appear?

3. If so, click the Mac's entry. Does Share Screen appear in the upper-right corner of the Finder window?

4. If that appears, click it, and enter the account information in the Screen Sharing app that launches. You should now have access.

With Screen Sharing enabled, if you also clicked Computer Settings and enabled a password for VNC viewers, you should also or instead be able to use standard VNC screen-sharing software from any computer on the network (including a Mac), or one that can reach the network remotely.

USE TARGET DISK MODE

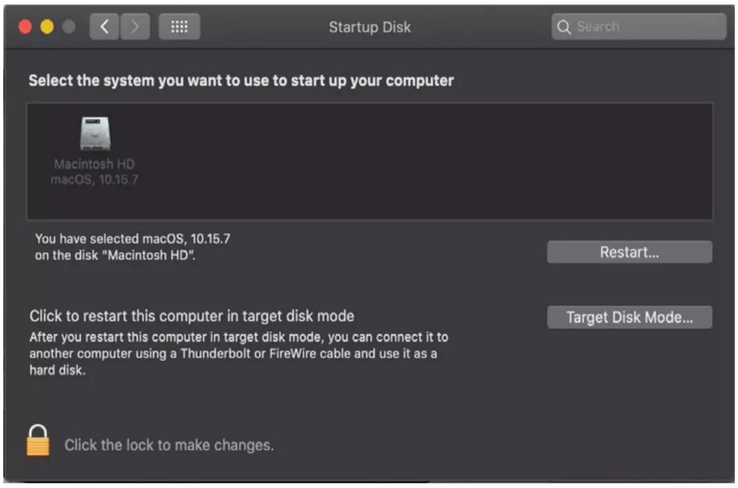
If all else fails, Target Disk Mode may save the day. This allows a Mac to mount like a hard drive on other Macs. Apple has a detailed set of instructions on its site (go.macworld.com/trmd), but the outline is:

1. Power down your damaged Mac.

2. Plug it in with the appropriate like-to-like cable with the Mac you want to mount it on.

3. Start up your damaged Mac while holding down the T key.

If all is well, your Mac with a broken display appears as a mounted drive on the Mac to which it's attached. ■


Startup Disk
Search
Macintosh HD
macOS, 10.15.7
Restart...
Target Disk Mode...

Select the system you want to use to start up your computer

You have selected macOS, 10.15.7
on the disk "Macintosh HD".

Click to restart this computer in target disk mode

After you restart this computer in target disk mode, you can connect it to another computer using a Thunderbolt or FireWire cable and use it as a hard disk.

Click the lock to make changes.

To select Target Disk Mode, go to System Preferences → Startup Disk, then click Target Disk Mode.

How Apple can power up automation on its platforms

Automation has gotten more and more powerful on Apple's platforms, but it's still got a ways to go.

BY DAN MOREN

IMAGE: APPLE

The great joy of technology is in what it can do for us—especially those tasks that we don't want to spend our own precious time on. Over the last few years, Apple has taken strides to bring automation capabilities to iOS in a variety of forms, including HomeKit and, more recently, Shortcuts.

But, as good as those options are, there are still places where they fall short of what we *could* have. Certainly, there are third-party offerings that can help bridge the divide, but given what Apple has already built into its operating system, it seems like a few improvements could go a long way to making its innate automation more capable right out of the box.

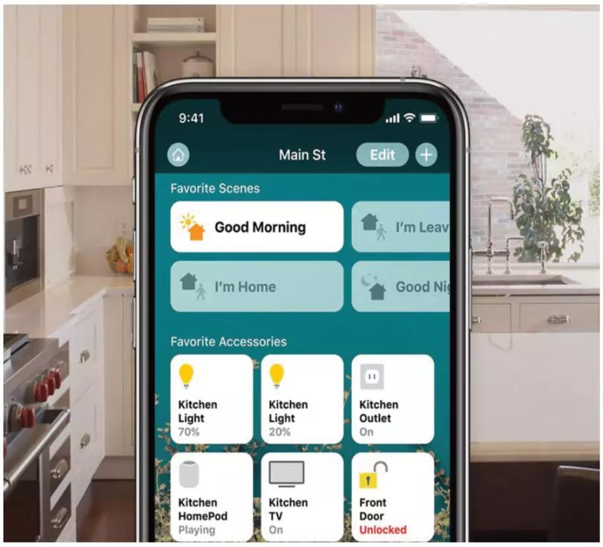
Recently, I've been spending more time exploring the powers of Apple's automation features, and while they truly do enable you to create some marvelous inventions, for every clever creation, there's an equal and opposite amount of frustration at what they can't quite do yet.

SENSOR INSENSITIVITY

The Home app was the first place Apple offered automation capabilities on its mobile operating devices. At first, the built-in options were pretty meager, but in recent years they've grown, including not only automation triggers based on location and time but triggers from sensors as well.

Well, some triggers from sensors. As someone with a few different HomeKit compatible sensors, I've been surprised to see how few of them are apparently available as triggers in HomeKit. The Eve Degree sensor, for example, which can measure temperature and humidity, doesn't show up as a possible trigger in the Home app, even though you can automate it via Eve's own software.

But even were it available in the Home app, there remains a significant gulf between Apple's two different automation options. For example, if the humidity increased beyond a certain threshold, I can't just have the app send me a push notification. (I can create a shortcut that manually checks the humidity level and sends me a notification if it's over a certain amount, but that's definitely more onerous, and can only run on a certain schedule.) There should really be a way to bridge the divide between HomeKit automations and Shortcut automations.



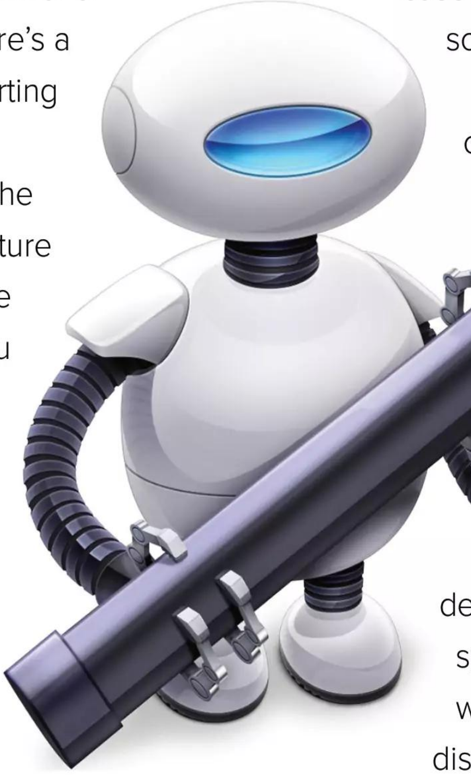
Expanding and deepening these kinds of automation capabilities on iOS and iPadOS could go a long way to unlocking more powerful features, and in turn present even more interesting and creative applications from power users.

A SHORTCUT TO AUTOMATION

Automation is a time-honored tradition on the Mac, where AppleScript dates back to the classic MacOS. In Mac OS X, Apple introduced Automator, an application that was supposed to make automation accessible to all and…sort of did? But it was always a little bit esoteric and hard to grasp.

Then came Shortcuts on iOS, which offered a workflow capability not unlike Automator's, but somewhat more modern and a bit more intelligible for the average user. And, unlike Automator, Shortcut seems to have taken off—it doesn't hurt that it's on Apple's most popular platform.

With the imminent arrival of Apple silicon Macs, there's a strong argument for porting Shortcuts and its automation abilities to the Mac. Yes, not every feature that works on an iPhone will work on a Mac—you can't guarantee a Mac has a camera built-in, for example, much less a GPS—but there are plenty of other capabilities that Shortcuts could offer to make up for it. Not the least of which would be a bridge into the aforementioned AppleScript or Automator, in order to open up more automation capabilities. In the end, bringing automation to more users, especially those who may already be automation fans on the Mac, seems like a good move.



MOVE SHORTCUTS INTO PRIME TIME

With iOS 14 and the widget revolution, Shortcuts has gotten more attention than ever. But that's only brought some of its limitations into stark relief. For example, though Apple has reduced the amount of user interaction required in iOS 14 by letting you run some shortcuts run without opening the app, there are still lots of cases where you have to at least tap something onscreen.

From a security and peace-of-mind standpoint, I can see why this choice is here, but it would still be great if users had the *option* of running Shortcuts silently in the background. There's a definite appeal to having the system fire off a task and deal with something without ever distracting your attention.

In the end, the more power that automation can put into hands of users, the better. Our computers are supposed to make our lives easier, not more complicated, and harnessing the power of automation technology is one way that it can take tasks off our metaphorical plates. ■

Shaun & Aaron

Married September 26, 2015

Shaun & Aaron were denied a wedding announcement in their local newspaper.

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HomePod mini: Small sound and familiar frustrations

The HomePod mini is cheaper but doesn't really improve on the original.

BY MICHAEL SIMON

Even if the HomePod mini didn't have a pedigree that includes such beloved Apple products as the iPod mini (go.macworld.com/ipdm) and Mac mini (go.macworld.com/macm), it still would be in a difficult spot. For one, its namesake is one of the rare misses in the Tim Cook era. For another, its size and lower price point puts it in direct competition with the ubiquitous Amazon Echo (go.macworld.com/aech) and Google Nest Audio (go.macworld.com/nsad).

While the HomePod mini is a much-

IMAGE: MICHAEL SIMON

needed, overdue entry to Apple's product matrix, it's unlikely to tempt anyone who isn't already invested in Apple's ecosystem. Where Apple's other mini products were geared toward switchers put off by the high prices of those products' respective siblings, the HomePod mini is merely the speaker Apple should have released first.

If you plug the HomePod mini into a power adapter that's less than 20W, you'll get an ominous orange glow.

As it stands, the HomePod mini feels like a catch-up device that doesn't bring anything new to the conversation. It looks great, and it's so small you want to pick it up and take it with you. It sounds good but it's blown away by the larger HomePod. It's cheap but not as cheap as the Echo Dot and Nest Mini. Three years later, the new HomePod once again feels like a starting place.

PETITE BUT FRUSTRATINGLY STATIONARY

The first thing that will hit you about the HomePod mini is, well, how mini it is. It measures just 3.5 inches around and has a smaller footprint than the newly redesigned Echo Dot (which, oddly enough, is also a sphere) and Google Nest Mini. It's too bad it's not a portable Bluetooth speaker because, at roughly the size of a large grapefruit, it fits nicely in my hand and feels great to hold.

It's extremely easy to set up, provided you have an iPhone or iPad nearby, and you'll want a subscription to Apple Music as well, at least for now. While Apple has opened up the HomePod software to work with other music services by default, only Pandora is supported for now, but Amazon Music, Spotify, and others should be on the way. When you ask it to play something, the screen at the top lights up and is very nice but you won't be able to see it unless you're looking directly at it. It's also missing an easy way to turn off the microphone outside the app.

Keeping with Apple's style, the HomePod mini has a similar aesthetic to the original HomePod, with a color screen at the top and a fabric-wrapped outer shell. Either color will look great on a shelf or counter and you'll want to put it in a highly visible spot, though you'll also need to devise a plan to hide the cord. Like the original HomePod, the 5-foot cord is attached and somewhat inflexible, so your placement options are limited.

Compounding things is the other end of the cord. The HomePod mini's cord doesn't have a plug like the original HomePod. Rather, it ships with Apple's bulky 20W USB-C power adapter, but any 20W USB-C charger will suffice. Anything less than that (including the power banks I tried as well as a Thunderbolt 3 port on a MacBook) will render the HomePod useless with an ominous pulsing orange light at the top.

That's a shame because the HomePod mini really wants to be portable, and not just because of its size. It's also very light, and while a battery would easily double or triple its weight, it would still likely be less than two pounds with a five- or six-hour battery. Add a MagSafe dock for quick and easy charging and you've got one of the best Bluetooth speakers on the market.

It seems as though Apple is setting HomePod mini up for GoPod. One of its main features is 360-degree audio "that sounds amazing from every angle," which would be far more useful if you could put the HomePod mini in the middle of a room. But you'll really only be getting 180-degree sound since your HomePod mini will almost certainly be positioned against a wall.

Even if you can magically position it in a place where people can walk around, that 360-degree sound is markedly different than the original HomePod's spatial awareness. Where the larger HomePod "analyzes the acoustics and adjusts the sound based on its location … so the entire space is filled with rich, well-defined tones," the smaller HomePod only promises to "sound amazing from every angle."

That's a hard claim to dispute, but I can tell you two things: the original HomePod sounds much better than the mini, and the HomePod mini sounds better than an Echo

The HomePod mini's cord is very inflexible.

Dot. The biggest issue I have with the mini is bass. Where the original HomePod shakes the room with deep low-end tones that border on excessive, the HomePod mini puts a much greater emphasis on upper mid and presence ranges so songs sound more trebly than they should. That said, it's quite loud for its size and shouldn't struggle to fill up any but the largest of rooms.

But while you can obviously adjust the volume, you're stuck with the sound. Since Apple still doesn't offer a proper equalizer for the HomePod, there isn't anything you can do about the levels unless you're using it as an AirPlay speaker, and even then, you're extremely limited. I want an equalizer for the HomePod, but I feel like I need one for the HomePod mini, especially when listening to bass-heavy rap or pop music.

The HomePod mini's screen is very nice but you won't see it unless you're above it.

SIRI STILL LACKS SMARTS

The other reason to buy a HomePod mini is as a smart Siri-powered speaker. Like Alexa on the Echo Dot or Google Assistant on the Nest Audio, Siri is always at the ready on HomePod mini, waiting for the telltale wake phrase, "Hey, Siri." It listens extremely well and usually perked up when I whispered from across the room, which is good because the device doesn't provide any visual cues that it heard you aside from the top screen, which you probably won't be able to see.

But while Siri's smarts have gotten better in iOS 14 with features like audio handoff, intercom, and personalized daily updates, it's still nowhere near as smart and effortless as Alexa or Google Assistant. And it's not materially better than Siri was when the original HomePod launched, which is one of its biggest failings.

The biggest issue is the lack of smart devices to interact with it—basically, any plug, switch, light, and camera is sure to work with Alexa and Google Assistant but probably won't support Siri. My home is equipped with dozens of

The HomePod mini is a great buy if the price turned you off to the original HomePod.

smart devices and the only ones that Siri can talk to are one of my two August locks and my Hue lights. So, you won't be able to ask Siri to change the temperature on your Nest Thermostat, or talk to the person who just rang your Ring Doorbell, or control the lamp plugged into a Kasa Smart Plug.

HomePod mini is also missing many of the things that make the Echo and Google Nest devices so compelling. It'll tell you a story if you ask, but it doesn't have anywhere near the library that Alexa has. It doesn't play games other than simple things like flipping a coin. And while Shortcuts are a great way to automate things, they require way more input and know-how than Alexa's skills.

BOTTOM LINE

Had the HomePod mini arrived before the original HomePod—as it probably should have—this would have been a very different review. But knowing how well the HomePod sounds, how cheap the Echo Dot and Nest Mini are, and how little Siri does compared to the other assistants, it's hard to give it a better than an average grade. Apple fans will enjoy it, but it's not going to tempt anyone to jump ship.

That said, Apple's new speaker is a solid entry at a good price, but you should wait until the inevitable sales start hitting Best Buy and Walmart. HomePod mini does the basics very well, looks great, and sounds good enough. If you're looking for an everyday music player, weather forecaster, simple question answerer, and light switch, it'll work a bit better than one of the low-priced alternatives, especially if you're already invested in the Apple universe.

At $99, the HomePod mini is probably cheap enough to succeed. But it probably won't make as much noise as Apple hopes it will. ■

HomePod mini

PROS

- Very nice design and small footprint.
- Decent sound with excellent volume.
- Works with more than just Apple Music.

CONS

- Sound isn't as full or deep as the original HomePod.
- Siri needs to improve.

PRICE

$99

COMPANY

Apple

‘Ted Lasso’ is Apple TV+’s most likable show yet

Despite being constructed almost entirely of tropes and clichés, this breezy comedy is the kind of show anybody can enjoy.

BY JASON CROSS

Ted Lasso is a college football coach from Kansas who is hired to coach an English Premiere League team. He knows next to nothing about soccer, and has never been to the U.K. But he sure loves being a coach!

That setup fuels a formulaic fish-out-of-water comedy filled to the brim with sports tropes. But Jason Sudeikis’ performance as Lasso, and the small witty subversions of some usual routines, are more than enough to keep you watching.

The show is low-stakes, quick-witted,

IMAGE: APPLE

and almost impossibly positive. It's unlikely to win any major awards and presents no big ideas to get you talking about the latest episode with your friends and coworkers. But it's also by far the easiest Apple TV+ show to get into, and the one any random viewer seems most likely to *like*.

LIKABLE LASSO

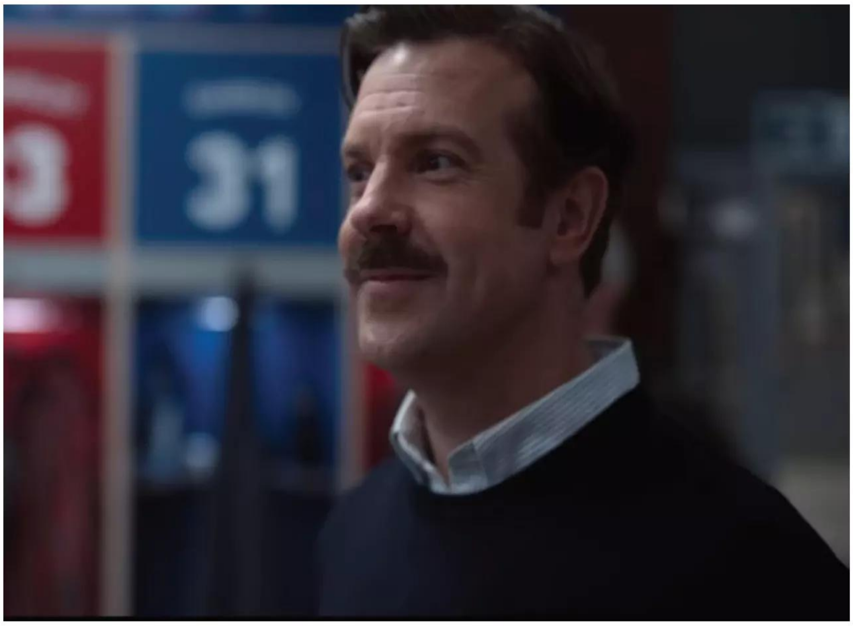
The Ted Lasso character originated in a comedy short (go.macworld.com/tdls) promoting NBC Sports' then-new coverage of Premiere League games. That Lasso is essentially the same as the one in the show, with one small but important difference: in the short, we're meant to laugh at what an ignorant idiot Lasso is. In the show, Lasso is still entirely ignorant of all things English (including football), but he is no fool. He's eager to learn and improve; he's getting it.

More important, for both the character and the show, is that Lasso cares more about molding a bunch of big-ego hothead players into better people and a cohesive team than he is about wins or losses (or ties—there are ties!). It's a sports trope that we've seen a million times, and Sudeikis sells it perfectly. He spends every scene dropping humorous off-the-cuff remarks while relentlessly building up literally everyone around him. It's infectious.

A CORNUCOPIA OF TROPES AND CLICHÉS

It's impossible not to like Ted Lasso and to root for his success. He's good-natured, friendly, and uplifting to a fault.

Hannah Waddingham, who plays Rebecca, the new team owner, seeks to exploit Lasso in her bid to destroy the team. Yes, it's another old sports trope—the posh new *Cruella de Vil* owner who secretly wants to destroy the team from the inside! She thinks Lasso will be a useful idiot in this endeavor, but even she can't help but be somewhat won over by him.



Ted Lasso is so filled with sports tropes and fish-out-of-water clichés that at times it seems constructed of little else. Tea is not as good as coffee! The Nigerian player is friendly and eager but lacks confidence! The team's best player is a model-dating hothead with an enormous ego! Guy from Kansas eats Indian food and it's way too spicy!

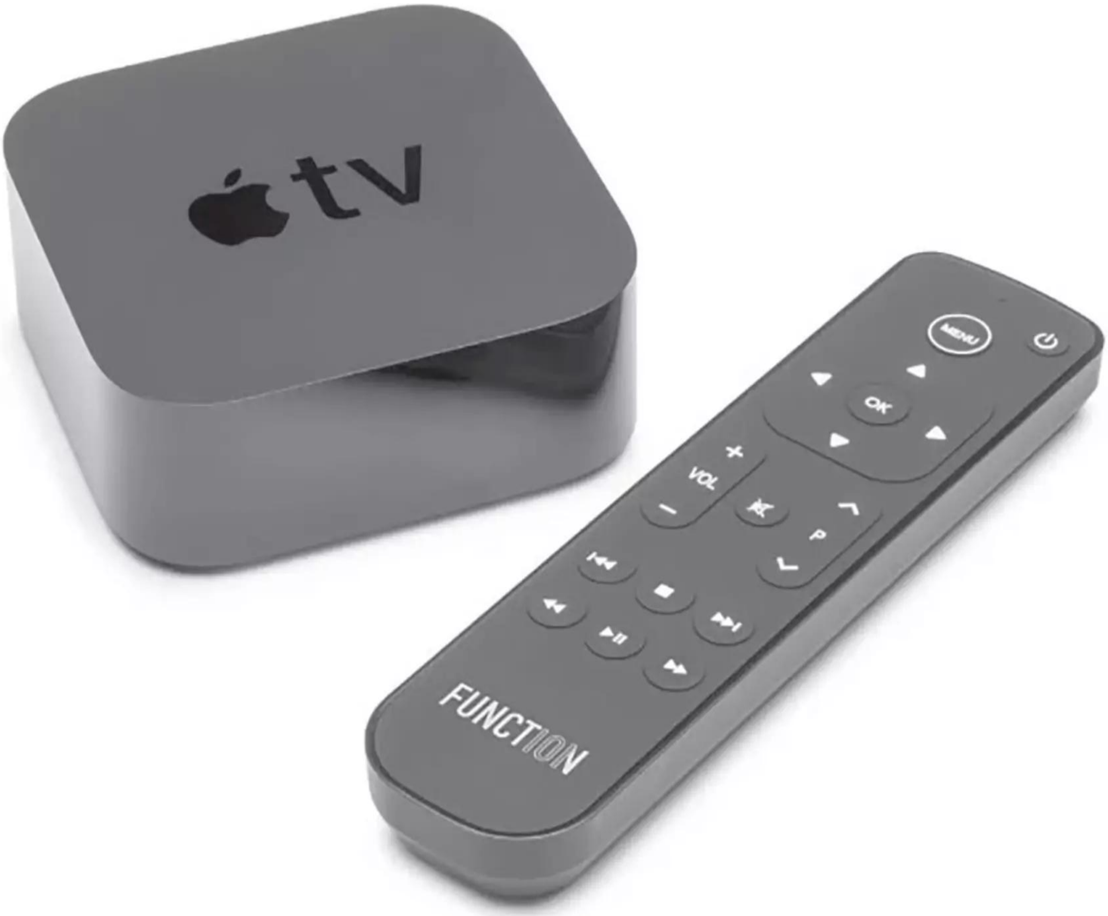
While the show is packed with these tropes, it often twists them just a little. For example, Rebecca gained ownership of the team in the divorce from her philandering husband, and we're given just enough of that depth in her character to feel a little sympathetic toward her. This is a show that doesn't even want you to hate its villain. Not really. The star player's airhead model girlfriend with the Bristol accent is not nearly as dumb as everyone assumes.

EASY TO WATCH, EASY TO LIKE

You're not going to see any original ideas in Ted Lasso, but what's there, while hackneyed, is executed deftly. Sudeikis' good-natured charm washes over the whole show and every tired cliché it is built upon. How can we be upset about the show's utter lack of originality when its lead character is beaming so much positive energy into our living rooms? When nearly every supporting role, even the one-note characters, have a smaller second note that takes the edge off?

Ted Lasso is a show that pulls off a difficult trick: it makes a hard push to be likable, and lands. You don't need to like sports or know anything about football (the U.S. or U.K. variety) to enjoy it. You don't have to keep track of a complex plot. It doesn't stress you out, or make you sad or angry, or tug hard on your heart strings. There's nothing here to *think* about. You face zero challenges as a viewer here, just smile and chuckle. This is, by far, the easiest show on Apple TV+, and it's amazing that it works.

At a time when everything seems stressful and more difficult than it needs to be, Ted Lasso may be just what we need; an easy, breezy comedy with likability and positivity without feeling cloyingly sweet and sentimental. ■



Function101 Button Remote for Apple TV: Better design than Apple's, with a few drawbacks

An improvement on Apple's awful remote in many ways, but is missing a few key features.

BY JASON CROSS

The Apple TV remote is so bad that a Swiss streaming TV company named Salt actually made headlines when it started to ship an alternative (go.macworld.com/ship). That remote may be a little hard to get your hands on, but now Function101 is selling what appears to be the identical remote for $30, so it should be a lot easier to get.

I've been using the Function101 remote for the last week with my Apple TV 4K, and

IMAGE: FUNCTION101

while I find its design to be vastly superior to the Siri Remote that came with my Apple TV (a low bar to clear, to be sure), I also found enough minor annoyances to temper my recommendation.

THE SIRI REMOTE SUCKS

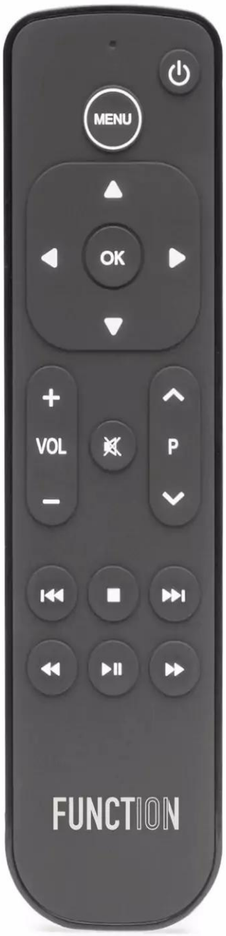
It's not exactly going out on a limb to say the Siri Remote is a disaster. Even Apple's biggest fans recognize it as a design flop on a par with the original Apple USB Mouse (aka "The Hockey Puck" [go.macworld.com/hkpk]). It's far too small and flat to fit comfortably in the hand, too symmetrical to operate by feel alone, and the swipe controls are mushy and imprecise.

Function101's remote appears to be identical to the remote (go.macworld.com/ship) offered by Swiss internet provider and streaming TV company Salt. It's about half again as long as the Siri Remote and several times as thick—so it's not large by any means, but it's a lot easier to hold on to.

It also features a wider array of buttons, including dedicated fast forward and rewind, skip forward and back, and stop buttons, as well as mute and channel/page up and down buttons. There's no swipe pad, but rather a standard four-direction input with the OK button in the middle.

A FEW MISSING FEATURES

While the Button Remote from Function101 is a lot easier to hold and use than Apple's Siri Remote (not to mention half the price), it's definitely missing a few features.



This is, at its core, a relatively standard programmable infrared remote that just comes pre-programmed for Apple TV and with Apple TV-centric buttons. But the fact that it only operates via IR means that you have to have a clear line of sight to your Apple TV. Apple's remote uses Bluetooth for more reliable communication. You can fairly easily program the remote (go.macworld.com/prem) to control the volume and power on your TV or sound bar, which is nice.

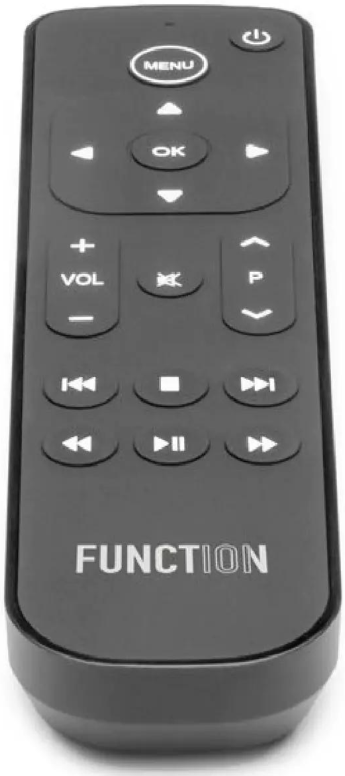
There's also no TV button. If you want to return directly to the Home screen, you'll have to hold the Menu button down for a couple seconds. As you have to long-press the Menu button to send the TV button input, there's no way to "double-click" the TV button, which is how you would usually bring up the app switcher. If you need to do that (to force-close a misbehaving app, for example), you'll have to dig out your Siri Remote.

Of course, there's also no Siri button or microphone either, so you can't use Siri. I don't get the impression that very many Apple TV users actually use Siri regularly, but they probably should; it's quite well-tailored to the functions and the information you'd want on your TV.

It also operates on a pair of AAA batteries rather than being recharged via Lightning like the official remote. Some may actually prefer that.

A CHEAP FIX UNTIL APPLE GIVES US A BETTER REMOTE

There's not much to say beyond that. The remote works fine. It's comfortable enough, looks good but not up to Apple's production quality standards, and gets the job done. You'll miss out on Siri and the TV button, but those are fairly small annoyances.



If you can't stand the Siri Remote and don't actually use Siri all that much with your Apple TV, you will probably consider this $30 well spent. If, like me, you have a Harmony remote or something else that can control your Apple TV along with your other AV gear, this is a step backward.

Frankly, the only reason this product exists at all is because Apple has totally dropped the ball on its own Apple TV remote. Users have complained about it for years, but Apple hasn't made it a priority to deliver something better. It's strange to recommend what is honestly a rather mediocre and basic product solely on the staggering failings of Apple's design, but here we are. ■

Button Remote for Apple TV

PROS

- Affordable.
- More comfortable and easy to use than Apple's remote.
- Controls TV or sound bar power and volume.

CONS

- No TV button.
- Middling build quality.
- No Siri functionality.

PRICE

$29.95

COMPANY

Function101

Anker Soundcore Spirit Dot 2: Bass on a budget

Great bass-heavy listening experience at an affordable price.

BY LEIF JOHNSON

If you think you need to dig deep into your bank account to get good bass from a pair of truly wireless earbuds, the Anker Soundcore Spirit Dot 2 (go.macworld.com/spd2) will rock your world—while also rocking your favorite tunes. These fitness-leaning buds also fit well and can handle as much sweat and raindrops as you can throw at them, all while costing considerably less than a hundred bucks. Such a pleasant price doesn't come without sacrifices, but they're relatively minor. The Spirit Dot 2 usually deliver when it counts.

IMAGE: LEIF JOHNSON

The case is a compact thing that easily slips in a pocket (although Anker could have made it smaller), and there is an admirable novelty to how its lid slides back rather than flipping open. This design may be a little too nifty for its own good, though, as a mere week of continual use found the lid threatening to slide open without prompting. Fortunately, the magnetic strips that charge the buds in the case cling to the earpieces like a vice, so there's a good chance the buds will stay put.

A sliding lid is interesting, but has its own shortcomings.

The case also allows for around 15 extra hours of playtime, which makes up for the disappointing five hours of playtime from the buds themselves. The case doesn't support wireless charging, but it does come with a cable for plugging into the sealed USB-C port on the back; three lights across the front let you know how much juice is left. Pairing is simple if a tad unintuitive: Once you've opened your phone or computer's Bluetooth menu, you need to pull both buds out of the case before the pairing prompt pops up.

The slim and subtly stylish buds themselves fit almost as comfortably in my ears as they fit in their case. They're relatively small, too. If you look at a person who's wearing them head-on, you'll barely notice them at all, and I like that I can pull off my shirt without the fabric getting caught on them. The Spirit Dot 2 might not have active noise canceling, but they seal the ears and muffle exterior sounds so well that it would be nice if they had the increasingly common "ambient" mode that uses the mic to pull in sounds from your environs.

If you don't get such a great fit right out of the box, there's an excellent chance you can remedy that with the five different ear tips and three hollow fins that come with the Spirit Dot 2. These are made with what Anker calls "SweatGuard" technology, which helps improve the seal and prevents your personal grime from corroding the tech.

The array of ear tips and fins that come with the Spirit Dot 2.

The SweatGuard tech is nice, but fortunately the Spirit Dot 2 boast an iPX7 rating, which means they're not in much danger from your perspiration in the first place. While it's not advisable, you should be able to dunk these in a meter of water for half an hour and they'll come out fine. This makes them ideal companions for the gym, especially since that excellent fit kept them from popping out of my ears even on a lengthy jog.

But it's the limitations of the touch controls that leave me hesitant to bring them along as companions for much else. There aren't any one-tap gestures: Instead, you tap twice on the right earbud to play or pause the music and you also use two taps to answer or end calls. Unfortunately, there's no way to hop back to the previous song on a playlist, but you can skip forward by tapping twice on the left bud. Activating Siri or Google Assistant is easy enough, as you just need to hold down your finger on either bud for roughly two seconds—but this is also what you do to reject a call or transfer between calls. It's not very intuitive.

And that's about it, really, aside from one potential annoyance: Unlike many other buds, the Spirit Dot 2 don't turn off automatically when you take them out of your ears. In theory, at least, they'll disconnect when you lay them back on the charging strips in the case. In practice, one of the SweatGuard fins would often slip a little and cover the charging surface when I pulled the buds out of my ear. That meant that, unknown to me, the stowed bud kept playing music and draining its battery inside the case for hours, and I'd only find out when trying to figure out why sound wasn’t coming from my phone (because the buds were still connected). Switching to one of the other fins seems to have fixed the problem—and I also learned to look out for the white lights on the buds that signify that they’re charging—but it’s something to keep in mind. Alternatively, you can turn off each bud by pressing down on the sides for eight seconds—which also means you can easily listen to one bud at a time—but they still won’t charge if you don’t line them up properly.

So how good is that bass? The box claims it’s “epic,” and while I wouldn’t go that far, it’s pretty damned good. When I fired up Eminem’s bass-heavy “Without You” and cranked up the volume, I actually winced.

As you might expect from such a pair of affordable bass-focused earbuds, the lows come through stronger than the highs in virtually all tracks, but the highs aren’t terrible, and tracks like Jazz Cartier’s “Tempted” still play much as the artist intended. These are especially ideal buds for lovers of genres like hip-hop and house, but they were also fine for a wide assortment of tracks like The Rolling Stones’ “Sweet Virginia,” Sufjan’s Stevens’ “Casimir Pulaski Day,” and even the Vienna Philharmonic Orchestra’s recording of Beethoven’s Fifth Symphony.

Just be sure you’re ready to devote yourself to that bass: It’s always there. You’re stuck with the EQ settings Anker gives you, as the Spirit Dot 2 buds don’t work with Anker’s app.

These are liveable limitations for such a low price. These are a great option for true wireless earbuds if you’re on a budget, of course, but it also means they make a great backup pair if you have the cash to throw around. With earbuds like these, you won’t be out of much if you lose them at the gym or on trips as you would with buds with fancier features like active noise cancellation and better touch controls.

Anker Soundcore Spirit Dot 2

PROS

- Excellent value.
- Deep, resonant bass.
- Waterproof.

CONS

- Sliding case lid doesn’t seem very durable.
- Mediocre battery life.

PRICE

$79

COMPANY

Anker

BOTTOM LINE

The Spirit Dot 2 may only cost $80, with that price you’re getting deeply resonant bass, a waterproof build, and a stylishly understated design. That’s a rare combination to find in so affordable a package, and the price makes it easier to overlook shortcomings like their middling battery life, somewhat fiddly controls, and a charging case of questionable durability. ■

SOL Republic Soundtrack Pro ANC: Good-enough features and performance for the price

These wireless noise-cancelling headphones deliver the basics, but their looks and features don't set them apart from the crowd.

BY THEO NICOLAKIS

Lifestyle audio maker SOL Republic has released a new headphone model as part of its Soundtrack series. The $200 Soundtrack Pro ANC (go.macworld.com/anpr) is an over-the-ear wireless headphone with active noise-cancelling technology and Bluetooth 5.0 on board.

The Soundtrack Pro ANC (a similar model without ANC is also available at Amazon for $170 [go.macworld.com/wtht]) comes in three colors: black, gray, and champagne. The acoustically transparent colored fabric covering the drivers

IMAGE: THEO NICOLAKIS

changes depending on which headphone color you choose. My review pair happened to be black.

GENEROUS BATTERY LIFE

Like its recent competition, the Soundtrack Pro ANC delivers enough battery to last more than a full day. Its 500mAh battery is rated to deliver 32 hours of wireless playback. Thanks to rapid charging technology, you'll get a full charge in about 3.5 hours.

You can charge the headphones with the included USB-A to USB-C charging cable, which plugs into the bottom of the right ear cup. I found the cable tight to fit due to the protruding flange from the bottom of the earcup. Five LED lights on the top of the right ear cup give you a visual indication of the charging status.

The headphones fold for easy travel, but SOL Republic should have included a carrying case—a pouch, at least—for the price point. Most buyers considering noise-cancelling headphones, after all, are likely planning to take them on the road. Speaking of which, there's no airline adapter or 1/4-inch adapter included, either.

Lights on the top of the right earcup let you know the charging status.

ERGONOMICS

Traditional three-button controls are located on the top of the right ear cup. The pause/play button has a distinctive protrusion, and the buttons are fairly easy to distinguish by touch. I wasn't always confident, however, I had my finger on the correct button and needed to move my finger from front to back to get oriented. Manufacturers should make all control buttons tactile-friendly. I prefer the more overt button distinctions you'll find on V-Moda, AKG, and Bowers & Wilkins headphones.

A side view of the SOL Republic Soundtrack Pro ANC headphones.

Plastic is the dominant material in the Soundtrack Pro ANC's construction, with a click-adjustable metal headband as the sole exception. I didn't like the headband, finding it more difficult than average to adjust. In fact, I found everything about this headphone's design to be stiff or tight. If you *prefer* tight-fitting headphones, you'll love the Soundtrack Pro ANC.

Take the ear cups, for example: Despite being soft yet able to keep their shape to create a stable listening cavity around my ears, they never felt comfortable. B&W's slightly more-expensive PX headphones create a similar stability with their earcups, but they're much more pliable.

Consequently, the SOL Republic Sountrack Pro headphones don't rank among my list of top performers for long listening sessions. The headphones became mildly uncomfortable and I felt relieved when I took them off. The headphones certainly exhibited a higher than average clamping pressure on my head. While that gives you a sense of security that they won't fall off, the trade-off is comfort.

I compared the SOL Repubic

SOUNDTRACK PRO
SOL

The SOL Republic headphones are mostly plastic with the click-adjustable headband a noticeable exception.

Soundtrack Pro with the Bowers & Wilkins PX (go.macworld.com/bopx) wireless headphones and the Bose Quiet Comfort 35 (go.macworld.com/qt35). Those headphones also have a solid clamp, but their headbands are far more flexible and forgiving, and each has much softer ear pads. With any luck, SOL Republic's cans will loosen up after an extended break-in period, but I can't say that for certain.

ACTIVE NOISE-CANCELLING PERFORMANCE

The SOL Republic Sountrack Pro ANC, like other noise-cancelling headphones, work their magic by using microphones mounted outside its earcups to capture the waveform of ambient noise. The headphone then produces an inverse waveform at the same frequency and amplitude and pipes this sound into its ear cups, mixed with the music, to mask the noise.

Alas, with stay-at-home orders and New York City becoming the epicenter of the COVID-19 outbreak, I didn't have the usual opportunities to put the SOL Republic's ANC performance to real-world test in noisy mass transit systems or on an airplane. I had to improvise.

For example, I have an air purifier that, when set to "high," measures 84dB on my sound pressure level meter. I've measured airplane cabins, by contrast, that can get as loud as 94dB, which is in the range of permanent hearing loss after prolonged exposure.

The Soundtrack Pro ANC did a decent job of taking the edge off the air purifier's fan noise—with the best performance concentrated primarily in the midband—but it couldn't quite compete with the Bose QC35. Bose and Sony reign supreme when it comes to active noise reduction.

SOL Republic's ANC headphones also

SOUNDTRACK PRO
L

The color of the acoustically transparent material inside the SOL Republic Soundtrack Pro ANCs' each cups differs with the outer color (black, gray, or champagne).

feature an ambient-aware mode that lets you hear the outside world around you without needing to take your headphones off. To enable this mode, simply press the power button twice and you'll find yourself in monitor mode. The Soundtrack Pro ANC did a good job apart from one glaring drawback: The headphones in monitor mode generated so much hiss I thought I was near a waterfall. But to be fair, even some really big headphone brands have gotten this feature terribly wrong.

REAL-WORLD TESTS

I tested SOL Republic's Soundtrack Pro ANC headphones with an iPhone XS and an Astell&Kern SA700 hi-res DAP. Source material came from the Tidal music-streaming service and various high-res audio files. I played the headphones primarily over Bluetooth, which is what I think the tartget audience will do. On the topic of Bluetooth, I'm disappointed to report that these headphones don't support either the aptX (near CD-quality) or aptX HD (better-than-CD-quality) codecs, which would have resulted in higher-fidelity audio.

The Soundtrack Pro ANC will do double duty as a hands-free headset for your calls, and they delivered excellent results in my limited testing environments. Callers could hear me clearly and I, in turn, could hear them. You'll get about 30 feet or so of wireless range, just be aware that walls or other obstacles will reduce the distance you can roam from your phone.

Sonically, the Soundtrack Pro ANC delivered punchy performances in both wired and wireless modes, with good midbass response. When played wirelessly, however, the overall sound was decidedly veiled. That's not necessarily unusual at this price-point, but it was noticeable. On Sarah McLachlan's *Afterglow Live*, for

SOL Republic's Soundtrack Pro ANC headphones in white.

The Soundtrack Pro ANC's headband has a soft, rubberized padding, and the generously sized ear cups maintain their shape well.

example, the Soundtrack Pro ANC failed to convey the sense of depth and breadth on tracks such as "World on Fire." Turning ANC on and off didn't make a big difference in that sensation. The top end was likewise reserved and rolled in wireless mode. These headphones are not what I'd describe as sonic overachievers.

The Soundtrack Pro ANC's wired performance—played through an Astell&Kern SA700 portable digital audio player—was significantly better, with that veil mostly lifted. The midrange cleared up significantly and the top end was better, too. Playing the 24-bit/48kHz version of Michael Jackson's *Bad*, and the 24-bit/96kHz version of Norah Jones' *Come Away with Me* showcased the drastic difference between the headphone's wired and wireless performance.

SOL Republic Soundtrack Pro ANC

PROS

- 32-hour battery life, with a full charge in 3.5 hours.
- Good sound (in wired mode) for the price.
- Good ANC performance (but no threat to Bose or Sony).

CONS

- Ambient-aware mode produces significant hiss artifacts.
- Fatiguing for long listening sessions.
- No aptX or aptX HD codec support.

PRICE

$199

COMPANY

SOL Republic

BOTTOM LINE

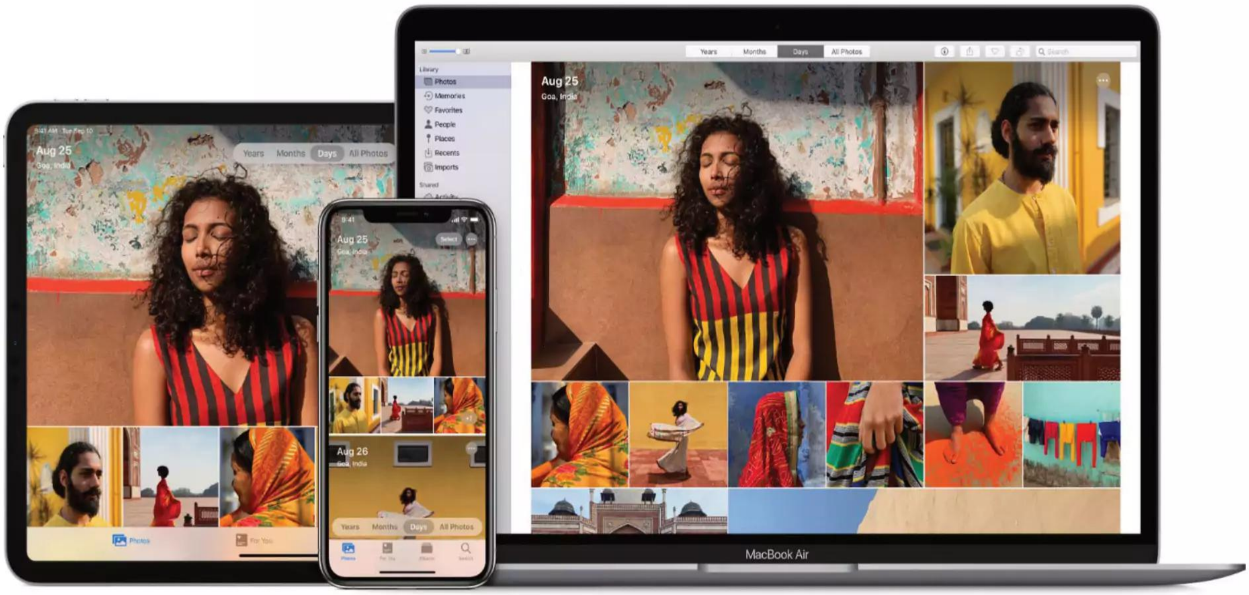
The SOL Republic Soundtrack Pro ANC wireless headphones are an average set of cans for the asking price. I didn't find them to be an exciting value, but despite their stiff, tight fit, they're not so sonically deficient that I'd say they're not worthy of a $200 bill.

If you like their design, battery life. and feature set, and they check all the other boxes you're looking for in headphones at this price range, I'd say order a pair and audition them for yourself. ■

Mac 911

Solutions to your most vexing Mac problems.

BY GLENN FLEISHMAN



COPING WITH INCONSISTENT FACIAL RECOGNITION IN APPLE PHOTOS

It is extremely handy to tag people you know in photos you take. You can then easily find images of those people across time and at specific events. This feature appears in Photos in iOS, iPadOS, and macOS, but may not work correctly across devices without iCloud Photos enabled—and sometimes even with it turned on.

Many companies have tried to make this easier by adding facial recognition, so that software algorithms try to guess who is the same person across many faces in your photos, which may include your dearest loved ones and legions of strangers.

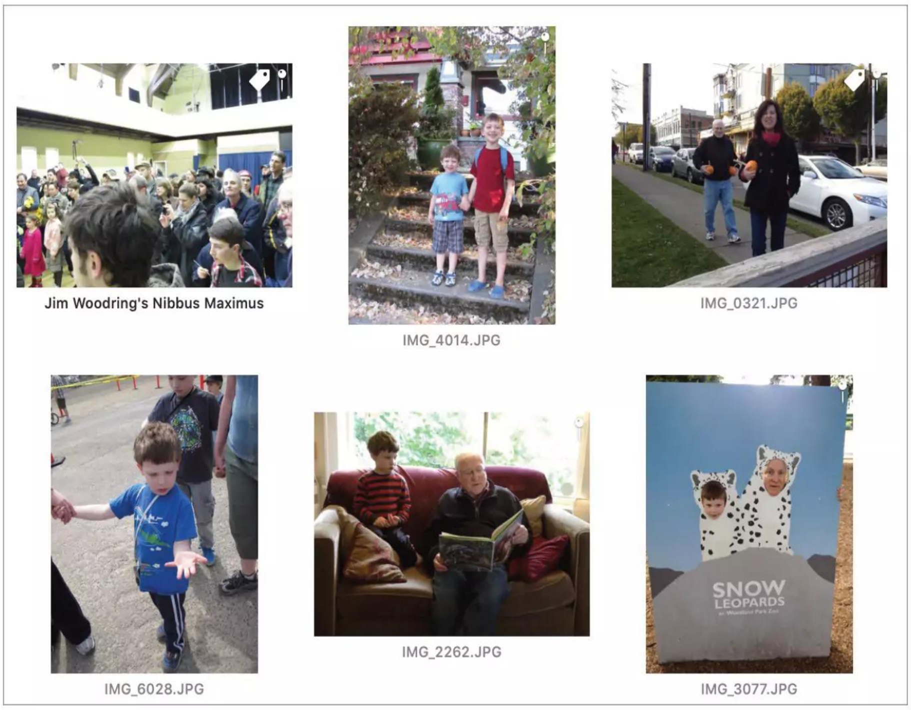
Apple's most recent approach, implemented several years ago in Photos, kept all facial ID local to your computer or mobile device. (As opposed to, ahem, Google.) In 2016, it promised a secure way to sync this information via iCloud, which finally went into effect in Photos 3 in late 2017 for macOS (go.macworld.com/pht3) and the Photos app in iOS 11.

The trick Apple employs is creating a sort of shorthand mathematical signature of each photograph associated with the same person. It is a system similar to iCloud Keychain that allows Apple devices

IMAGE: APPLE

logged into the same iCloud account to exchange those signatures via iCloud sync without Apple having the ability to decrypt and view it. Apple doesn't send names or images, just these shorthand notations.

With iCloud Photos enabled, this should allow the same photos to have the same people identified in each of them. In practice, I've found facial-recognition generally poor. Whenever I revisit a person's entry in the People album, I find a lot of photos containing unrelated faces. No matter how much I sort and train, it never seems to get much better. And the set of images on my iPhone and Mac don't seem to match for people, either.



No matter how many times I try to identify my dad to Photos, it keeps reverting to bad matches. Here, only 3 of 6 matches are correct.

Readers have written in about this problem lately and a related one. If you opt to not use iCloud Photos, which can rack up iCloud storage fees if you have a fair number of images, but instead use iTunes (Mojave and earlier) or the Finder's sync interface (Catalina and later) for synchronization, faces may be out of joint.

Photos does attach a person's name to an image's metadata, so that syncing passes that along in a way that Photos on another device can read it and assign that person to the correct identity in Photos. But it doesn't bring sorting order or other parameters along. Because the facial recognition isn't synced via iCloud, using direct iTunes or Finder sync also seemingly means ID performed on one platform may not be the "truth" (the most accurate associated information for a piece of data), leaving Photos to wrestle with which faces to tag.

If you export images from Photos for macOS, it does retain people's names that you've tagged, however, allowing use of that information in other photo-management software.

APPLE PHOTOS: WHAT CAN YOU DO IF YOU CROP OUT DETAILS AND LATER WANT THEM BACK?

A photo often doesn’t contain exactly what you want. Cropping a picture can be a solution. But what do you do if you crop out a critical detail and later want it back? One *Macworld* reader cropped herself out of a picture with her newborn baby! Momma, come back!

If you used an Apple photo organizing app to crop the photo, you’re in luck. Fortunately, both the long-discontinued iPhoto (which no longer works starting with macOS 10.15 Catalina) and the modern Photos app both support non-destructive cropping. You can revert backwards simply to re-crop an image or reset it to its full bounds.

In both iPhoto and Photos (the steps are shockingly identical):

1. Select an image you cropped.

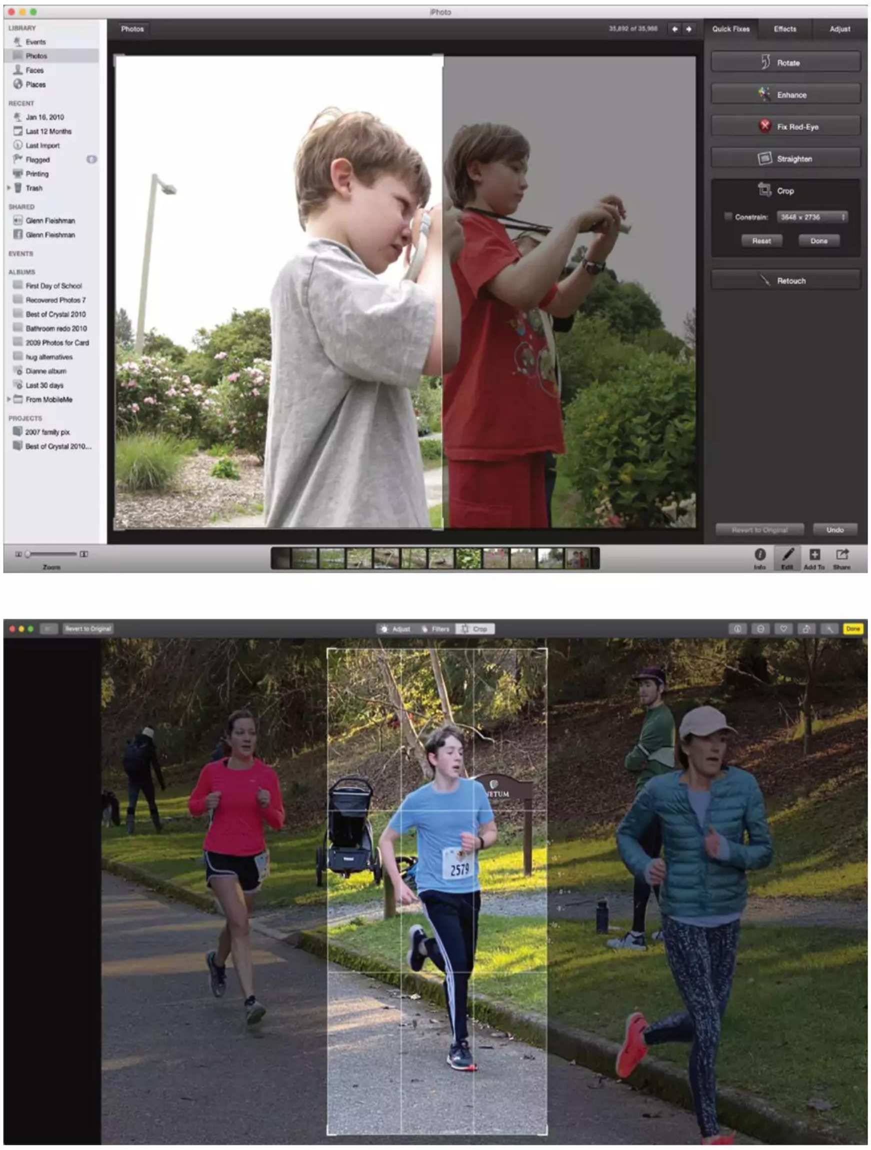
2. Click the Edit button.

3. Click the Crop button.

4. You should now see the cropped image and the full image around it. Drag the handles to change the cropping. Or click Reset to remove the crop altogether.

5. Click Done.

There are a few provisos:


iPhoto
LIBRARY
Events
Photos
Faces
Places
RECENT
Jan 16, 2010
Last 12 Months
Last Import
Flagged
Printing
Trash
SHARED
Glenn Fleishman
Glenn Fleishman
EVENTS
ALBUMS
First Day of School
Recovered Photos 7
Best of Crystal 2010
Bathroom redo 2010
2009 Photos for Card
hug alternatives
Dianne album
Last 30 days
From MobileMe
PROJECTS
2007 family pix
Best of Crystal 2010...
Photos
Quick Fixes
Effects
Adjust
Rotate
Enhance
Fix Red-Eye
Straighten
Crop
Constrain: 3648 x 2736
Reset
Done
Retouch
Revert to Original
Undo
Zoom
Info
Edit
Add To
Share
Revert to Original
Adjust
Filters
Crop
Done
2579

You can recrop images within Photos.

> If you have cropped the image on your iPhone or iPad with iCloud Photos enabled, you have to go back to the original device to revert cropping. And depending on timing and syncing, it may be unavailable.

> If you exported the modified image from iPhoto or Photos and deleted the original in your library, the exported copy only contains the cropped data and can't be restored.

USE OPTIMIZE MAC STORAGE WITH iCLOUD DRIVE TO PACK VIDEOS INTO A CROWDED MAC

iCloud can effectively give you up to 2TB of additional storage to supplement your Mac's drive capacity, particularly useful with 256GB and 512GB Macs. The trick is using the Optimize Mac Storage checkbox found in the iCloud preference pane when you click Options to the right of iCloud Drive (Mojave and earlier) or in the Apple ID preference pane's iCloud section at the main level (Catalina and later).

iCloud Photos and iCloud Music Library are their own beasts—iCloud Photos has its own optimization controls, while iCloud Music Library's availability and management of locally stored and iCloud-stored files depends on whether you have an iTunes Match or Apple Music subscription.

But for general storage, iCloud Drive and optimized storage can be truly useful. As you add material to iCloud Drive and you start to run up against a full drive on your Mac, macOS deletes the local copy of files and puts placeholders in their stead, while iCloud retains the files. Double-click or open a file from an app, and macOS automatically downloads it.

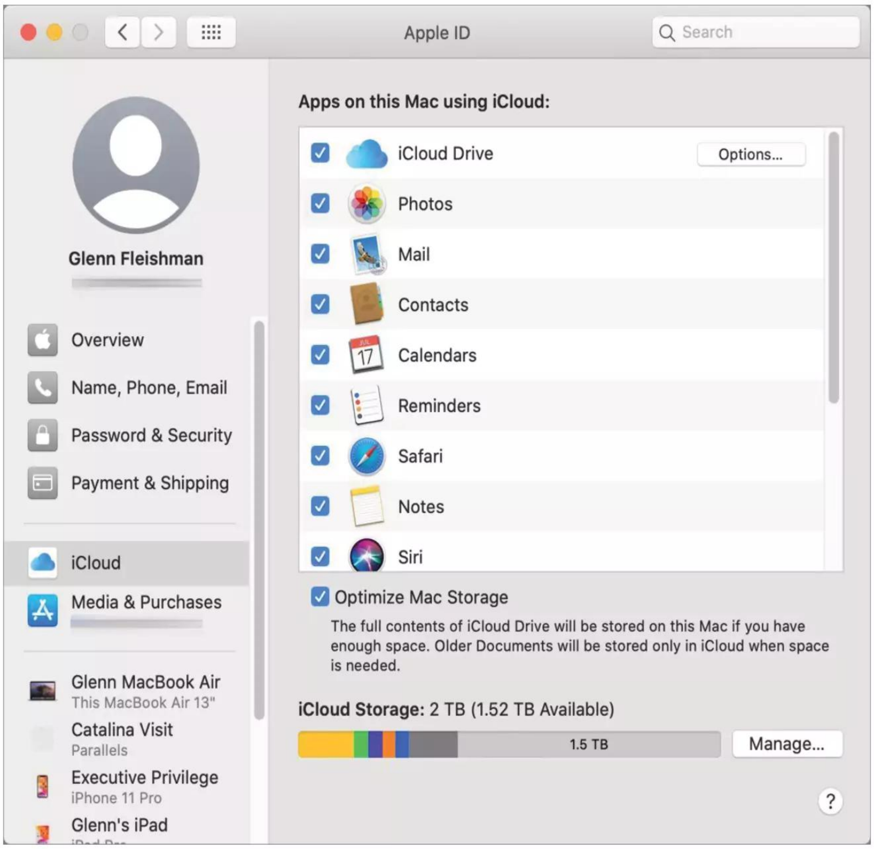
As an example, one Macworld reader has nearly 500GB of instructional videos on an external drive connected to her Mac, and about 250GB of storage remaining on her computer, but would like to consolidate it all. iCloud Drive coupled with storage optimization can be ideal for this in the right circumstances.

First examine requirements and capabilities:

> Check that you have enough iCloud storage purchased. You likely have to upgrade to 500GB or 2TB of storage—50GB is not usually enough to be valuable offloading from your Mac.

> Check your broadband plan. Are you charged for excess data usage or throttled to a lower speed each month against some baseline, and if so, how close to that limit are you? (Some ISPs have temporarily suspended limits due to the pandemic and the work-from-home shift.)

> Consider your broadband speed. Do you have enough throughput to upload


Apple ID
Search
Options...
Glenn Fleishman
Overview
Name, Phone, Email
Password & Security
Payment & Shipping
iCloud
Media & Purchases
Glenn MacBook Air
This MacBook Air 13"
Catalina Visit
Parallels
Executive Privilege
iPhone 11 Pro
Glenn's iPad
1.5 TB
Manage...
?

Apps on this Mac using iCloud:

☑ iCloud Drive
☑ Photos
☑ Mail
☑ Contacts
☑ Calendars
☑ Reminders
☑ Safari
☑ Notes
☑ Siri

☑ Optimize Mac Storage

The full contents of iCloud Drive will be stored on this Mac if you have enough space. Older Documents will be stored only in iCloud when space is needed.

iCloud Storage: 2 TB (1.52 TB Available)

Optimize Mac Storage lets you cram 50 lbs. of digital potatoes in a 5 lb. sack.

many gigabytes and download them on demand?

Next, follow these steps:

1. Select Optimize Mac Storage in the appropriate preference pane for your version of macOS as noted above. (If you have multiple Macs logged into the same iCloud account, you will need to enable optimization on each of them to avoid filling their startup volume.)

2. Copy a batch of tens of gigabytes of data from your external sources to iCloud Drive.

3. Wait for the files to upload fully. You can check via iCloud.com to see if the files are available there as a check on completion.

4. Copy another batch of files. As pressure increases on your Mac's storage, macOS will—as noted above—start deleting the local copies. You should be able to monitor storage and watch that happen.

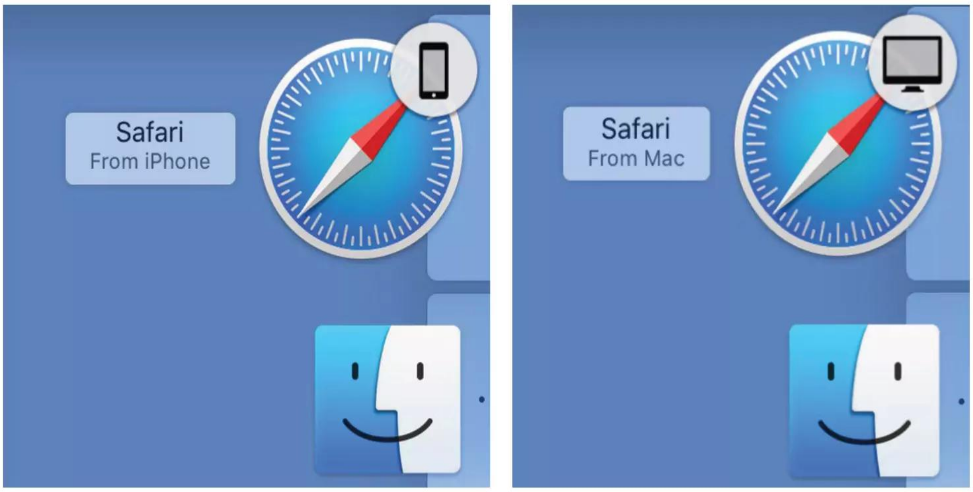
5. Continue a batch at a time: copy, wait for upload, repeat.

Another option is to upload directly via the iCloud.com site, but Apple provides just a file-selection tool, and uploading via a browser can be fraught with interruptions and slowdowns.

To be extremely clear: Don't delete any files! macOS and iCloud manage the process so you don't have to.

THREE WAYS TO PASS WEB PAGES ACROSS YOUR MAC, iPHONE, AND iPAD

I used to dream that QR Codes would be the magical glue that would allow the easy passage of content among digital and analog devices. Want to read a web page on your phone that you're viewing in your desktop browser? Just snap a picture of a QR Code on the page, and voilà! it appears on your mobile device.



macOS shows an overlay in the Dock with the app name and device type, but not the device name, that's available to hand off a page.

The reason for this hope was that it once was hard to move URLs around, unless you used URL shorteners, and even then it often involved careful retyping. Apple got on top of this years ago with Handoff (go.macworld.com/hndf), a set of features that rely on Apple's Continuity (go.macworld.com/cnty) framework—which pulls together Wi-Fi, Bluetooth, and proximity—to let you hand the state of an app off among Macs, iPhones, and iPads, including a web page in Safari while Safari is the active app.

AirPlay is also part of that mix, letting you send or receive all sorts of documents and items, including photos, iWork files, and web pages. And iCloud adds yet another option: making the state of open tabs on each device logged into the same iCloud account accessible to every other device in that set. (And QR Codes work, too!)

Here's how to send a web page to or among your devices.

Handoff

While viewing a page in Safari for macOS or mobile Safari and Safari is your foreground app, you can also open the page from your other devices. (This also works with any other app that supports Handoff, and for which you have the same app on the two devices engaged in Handoff.)

> In macOS, a Safari icon appears on the Dock: at left, if the Dock is on the bottom of the screen; at top, if the Dock is displayed at right. The icon is overlaid with an icon of the device on which the page is open, while a floating label shows Safari plus a generic label like "From iPhone" or "From Mac." Click it to open the page in Safari.

> On an iPhone, swipe up and the Handoff notice appears as a lozenge that features the Safari app icon, the label "Safari," and the actual name of the device handing off. Tap it to open it in Safari.

> On an iPad, the icon appears at the right side of the iPad app dock, looking quite similar to how it appears on a Mac. Tap it to open the page in Safari.

If you have Safari frontmost on two or more of your other devices, only the page associated with the device you most recently interacted with appears.

AirPlay

In Safari on any Apple platform, tap the Share button and tap AirDrop, then tap the device with which you want to share the Web page. In iOS 13 and iPadOS 13, you can also tap on the top raw of the share sheet an icon that shows previous AirDrop destinations (overlaid with the AirDrop icon).

When the other device receives the page, it opens it automatically if you're logged into the same iCloud account. If not, that device offers a prompt to open the page.

iCloud bookmarking syncing

iCloud can sync various elements of Safari across your devices if you have it enabled. In macOS 10.14 Catalina, turn on iCloud Safari sync in the Apple ID preference pane in the iCloud settings. In macOS 10.13 Mojave and earlier, look in the iCloud preference pane. In iOS and iPadOS, you can enable or disable it in Settings ➜ user name ➜ iCloud.

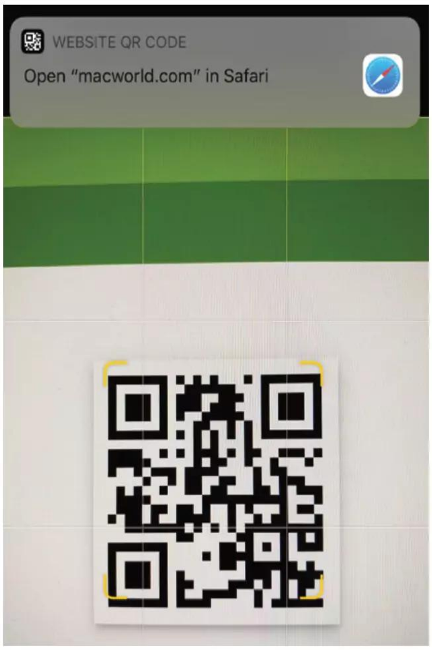
iCloud syncs *information* about open tabs on your devices, but doesn't open them. Instead, you have to look to find them:

> In Safari for macOS, click the Show Tab Overview button in the upper-right corner of the screen, which looks like two overlapping squares. Safari reveals all current tabs at the top as window thumbnails. Look or scroll down, and all other synced devices' open tabs appear under their names. (They are sometimes slightly out of sync, I've found.) Tap any of those links to open the Web page.

> In Safari for iOS and iPadOS, tap the Tabs button in the lower-right corner of the screen (iOS) or in the upper-right corner (iPadOS). Like on the Mac, this reveals open tabs on the device, but swipe up to reveal the list of Web pages open in tabs on your other devices. Tap any link to open it.

QR Code

The dream of the QR Code never died for me—nor, apparently, Google in Android and Apple in iOS and iPadOS. Both major mobile operating system makers added QR Code support in their camera apps a



A QR Code can embed a Web page URL. The QR Code can be in a digital medium or splashed on a billboard.

few years ago, letting you point the camera at a code, have it automatically recognized, and be offered the opportunity to open an embedded Web page link. (QR Codes also embed Wi-Fi network information, contact cards, and much more.)

You may find QR Codes in the wild, though they sometimes appear on Web pages in digital media. To scan a QR Code, make sure that in iOS or iPadOS that at Settings ➜ Camera, Scan QR Codes is enabled.

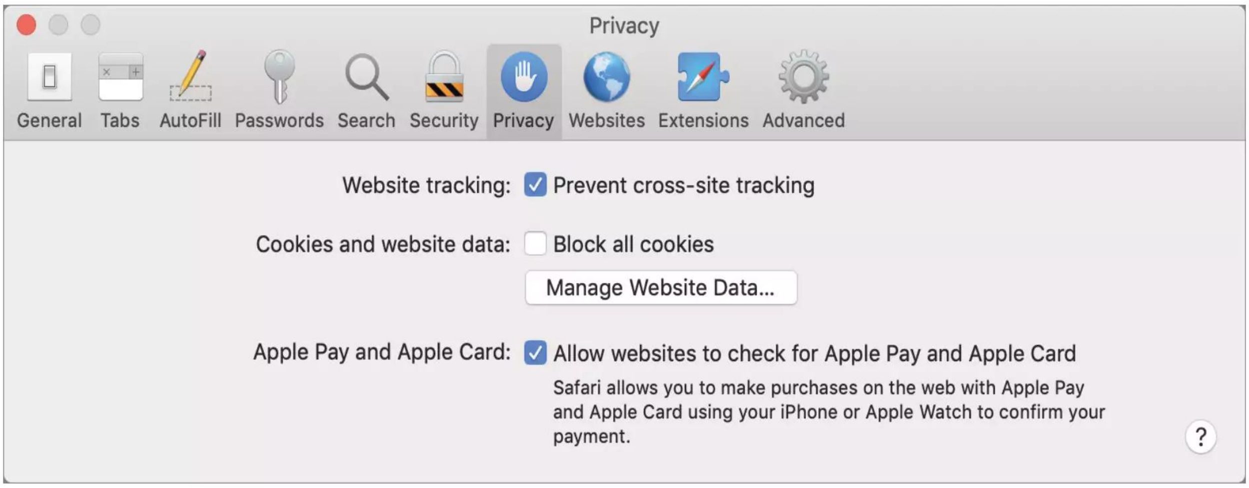
DOES SAFARI ALWAYS REQUEST FRESH LOGINS TO YOUR SITES? IF IT DOES, THERE'S A REASON

The whole system of web browsing and web servers was designed to be “stateless”: each page load is disconnected from each other. Cookies were invented in the very early days to serve as a kind of breadcrumb (or cookie crumb). When you log in to a website, the primary method of preserving state—of keeping an active session in which you're remembered from page to page—is dropping a cookie to your browser that your browser in turn sends back every time it requests a page. Thus is the web crudely knit together. (With web apps, even though you're on what appears to be a single page, all the behind-the-scenes interaction still sends cookies.)

One *Macworld* reader finds themselves constantly prompted in Safari to log in again when they visit any site, and they're unclear why. I suspect an excess of privacy—or maybe just the right amount—is bedeviling them. One of the following scenarios is likely.

Block All Cookies. Safari for iOS, iPadOS, and macOS lets a user prevent their browser from accepting and sending any cookies at all. In macOS, that's Safari ➜ Preferences ➜ Privacy and the Block All Cookies checkbox; in iOS and iPadOS, it's a switch at Settings > Safari. However, with all cookies disabled, it's unlikely most sites will allow a proper log in at all.

Private Browsing. All modern browsers let you enable a private, incognito, or



Website tracking: ☑ Prevent cross-site tracking

Cookies and website data: ☐ Block all cookies

Apple Pay and Apple Card: ☑ Allow websites to check for Apple Pay and Apple Card

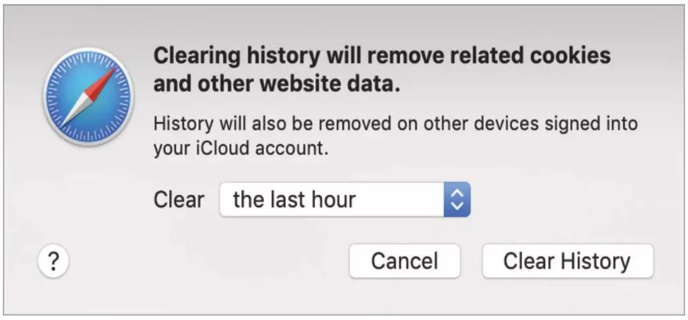
Safari allows you to make purchases on the web with Apple Pay and Apple Card using your iPhone or Apple Watch to confirm your payment.

Setting Safari to block all cookies prevents many Web sites from letting you maintain a session.

similar mode in which the tab you're using picks up no stored information for your browser, only stores cookies and other data while it's open, and then deletes it all when the tab is closed. It's an effective way to avoid many kinds of tracking. When used for site logins, it also prevents remembering your login at all, so each subsequent visit after closing a tab requires a fresh login. You can tell if you're using Private Browsing in Safari on any platform, because the Location bar's background is a dark grey. Safari for macOS provides no additional clues, but in iOS and iPadOS, tap the tabs in a browser window, and in the tabs view the word Private appears in black type on a white lozenge to indicate that's the mode you're using.

Clear History. If you use Clear History in Safari, it will wipe out all your browsing history, cookies, and either site-related data for a period of time you select (macOS) or entirely. That option in Safari for macOS is Safari → Clear History; in iOS and iPadOS, it's found at Settings → Safari labeled Clear History and Website Data.

Third-party browsing history cleaner. A number of apps are designed to erase tracking and traces of your activity from your company and online. If you have any "cleaner" app installed, check its configuration. It might be wiping out cookies on a regular basis. ■



Clearing history will remove related cookies and other website data.

History will also be removed on other devices signed into your iCloud account.

Clear: the last hour

Clearing history will remove cookies needed to preserve a login.